Electronic Supplementary Information for

Oligomerization of Phosphaalkynes Mediated by Bulky *N*-Heterocyclic Carbenes: Avenues to Novel Phosphorus Framework

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1. General and Synthesis

Experimental Section

General Considerations. All manipulations were performed under an atmosphere of dry, oxygen-free N_2 by means of standard Schlenk or glovebox techniques (MBraun LABmaster SP drybox and Innovation Technology glovebox both equipped with a −35 °C freezer). Pentane and toluene were collected from a Grubbs-type column system manufactured by Innovative Technology. Benzene and $CHCl_3$ were dried over 4 Å molecular sieves. Molecular sieves, type 4 Å (pellets, 3.2 mm diameter) purchased from Sigma-Aldrich were activated prior to usage by iteratively heating with 1050 W Haier microwave for 5 min and cooling under vacuo. The process was repeated until no further moisture was released upon heating. $CDCl_3$ and C_6D_6, purchased from Cambridge Isotope Laboratories, was degassed and stored over 4 Å molecular sieves in the glovebox for at least 8 h prior to use. IMes,[S1] IDipp[S1] SIMes[S2] and ^{Men}CAAC[S3] were synthesized according to a reference. Spectra were recorded on a Bruker Avance III 400 MHz or an Agilent DD2 500 MHz spectrometer and spectra were referenced to the residual solvent of $CDCl_3$ (^{1}H = 7.26 ppm; ^{13}C = 77.0 ppm). Chemical shifts (δ) are reported in ppm and the absolute values of the coupling constants (*J*) are in Hz. High resolution mass spectra (HRMS) were obtained on a JMS-T100LC JEOL DART or AB Sciex QStarXL ESI.

Snythsis of **2**. A toluene solution (2 mL) of SIMes (10 mg, 0.0327 mmol) and *t*BuC≡P (4.9 mg, 0.0490 mmol) was rapidly stirred at room temperature for 72 h. Toluene was removed in vacuo to afford a yellow oily product. Recrystallization in pentane at -20 ^{o}C over night gave **2** as a yellow powder in 72 % (10.7 mg). ^{1}H NMR (500 MHz, $CDCl_3$): 7.03 (s, 1H, Ar^{Mes}-*H*), 7.01 (s, 1H, Ar^{Mes}-*H*), 6.96 (s, 1H, Ar^{Mes}-*H*), 6.94 (s, 1H, Ar^{Mes}-*H*), 6.82 (s, 1H, Ar^{Mes}-*H*), 6.78 (s, 1H, Ar^{Mes}-*H*), 6.73 (s, 1H, Ar^{Mes}-*H*), 6.69 (s, 1H, Ar^{Mes}-*H*), 4.07 (m, 2H, C*H*$_2$), 3.88 (m, 2H, C*H*$_2$), 3.16 (dd, $^2J_{H\text{-}H}$ = 10.0 Hz, $^3J_{H\text{-}H}$ = 7.5 Hz, 1H, C*H*$_2$), 2.97 (t, $^3J_{H\text{-}H}$ = 9.0 Hz, 2H, C*H*$_2$), 2.78 (dd, $^2J_{H\text{-}H}$ = 10.0 Hz, $^3J_{H\text{-}H}$ = 7.5 Hz, 1H, C*H*$_2$), 2.54 (s, 3H, Ar^{Mes}-*Me*), 2.39 (s, 3H, Ar^{Mes}-*Me*), 2.38 (s, 12H, Ar^{Mes}-*Me*), 2.32 (s, 3H, Ar^{Mes}-*Me*), 2.31 (s, 3H, Ar^{Mes}-*Me*), 2.30 (s, 3H, Ar^{Mes}-*Me*), 2.28 (s, 3H, Ar^{Mes}-*Me*), 2.20 (s, 3H, Ar^{Mes}-*Me*), 2.18 (s, 3H, Ar^{Mes}-*Me*), 0.87 (s, 9H, C*Me*$_3$), 0.72 (s, 9H, C*Me*$_3$), 0.66 (s, 9H, C*Me*$_3$). ^{13}C NMR (126 MHz, $CDCl_3$): 156.9 (d, $J_{C\text{-}P}$ = 37.8 Hz, N_2C),

155.9 (d, $J_{C\text{-}P}$ = 34.0 Hz, N_2C), 145.2, 144.8, 144.3, 142.7, 139.2, 138.7 (d, $J_{C\text{-}P}$ = 2.1 Hz), 136.5, 135.61, 135.57, 135.53, 135.52, 135.3, 135.2, 134.7, 134.5, 132.2 (d, $J_{C\text{-}P}$ = 3.3 Hz), 130.5, 130.4, 129.9, 129.7, 129.6, 129.3, 129.2, 128.4 (Ar^{Mes}-*C*), 102.7 (d, $J_{C\text{-}P}$ = 75.6 Hz, N_2C=*C*), 90.6 (d, $J_{C\text{-}P}$ = 67.9 Hz, N_2C=*C*), 55.0, 54.4, 52.8, 50.2, 41.0, 38.6, 37.1, 33.9 (d, $J_{C\text{-}P}$ = 10.2 Hz), 31.3 (d, $J_{C\text{-}P}$ = 3.8 Hz), 30.9 (d, $J_{C\text{-}P}$ = 6.6 Hz), 22.5, 22.1, 21.5, 21.2, 21.1, 20.9, 20.8, 20.4, 20.3, 20.2, 20.0, 19.8, 19.54, 19.48 (Saturated *C*), 34.3, 21.6, 14.2 (pentane-*C*). $^{31}P\{^1H\}$ NMR (243 MHz, $CDCl_3$): δ (ppm) 264.7 (dd, $^1J_{P\text{-}P}$ = 302 Hz, $^2J_{P\text{-}P}$ = 77 Hz, C=*P*), 18.7 (dd, $^1J_{P\text{-}P}$ = 185 Hz, $^2J_{P\text{-}P}$ = 77 Hz, *P*C=P), 2.2 (dd, $^1J_{P\text{-}P}$ = 302 Hz, $^1J_{P\text{-}P}$ = 185 Hz, C=P*P*). MS (ESI) $[M+1]^+$ $C_{59}H_{98}N_4P_3^+$ calc. 1147.6999 m/z, found 1147.7008 m/z.

Synthesis of **3**. A toluene solution (2 mL) of SIMes (10 mg, 0.0327 mmol) and AdC≡P (8.7 mg, 0.0490 mmol) was rapidly stirred at room temperature for 72 h. Toluene was removed in vacuo to afford **3** as a yellow solid in 84 % (15.7 mg). Single crystals were obtained by slow evaporation of a concentrated $CHCl_3$ solution of **3**. ^1H NMR (500 MHz, $CDCl_3$): 7.02 (s, 2H, Ar^{Mes}-*H*), 6.97 (s, 1H, Ar^{Mes}-*H*), 6.94 (s, 1H, Ar^{Mes}-*H*), 6.84 (s, 1H, Ar^{Mes}-*H*), 6.83 (s, 1H, Ar^{Mes}-*H*), 6.70 (s, 1H, Ar^{Mes}-*H*), 6.69 (s, 1H, Ar^{Mes}-*H*), 4.12-3.90 (m, 3H, CH_2), 3.82 (m, 1H, CH_2), 3.18 (dd, $^2J_{H\text{-}H}$ = 10.0 Hz, $^3J_{H\text{-}H}$ = 7.5 Hz, 1H, CH_2), 2.97 (dd, $^2J_{H\text{-}H}$ = 9.5 Hz, $^3J_{H\text{-}H}$ = 7.5 Hz, 1H, CH_2), 2.92 (t, $^3J_{H\text{-}H}$ = 9.0 Hz, 2H, CH_2), 2.81 (dd, $^2J_{H\text{-}H}$ = 10.5 Hz, $^3J_{H\text{-}H}$ = 7.0 Hz, 1H, CH_2), 2.56 (s, 3H, Ar^{Mes}-*Me*), 2.54 (s, 3H, Ar^{Mes}-*Me*), 2.42 (s, 3H, Ar^{Mes}-*Me*), 2.39 (s, 3H, Ar^{Mes}-*Me*), 2.38 (s, 3H, Ar^{Mes}-*Me*), 2.37 (s, 3H, Ar^{Mes}-*Me*), 2.35 (s, 3H, Ar^{Mes}-*Me*), 2.34 (s, 6H, Ar^{Mes}-*Me*), 2.26 (s, 3H, Ar^{Mes}-*Me*), 2.23 (s, 3H, Ar^{Mes}-*Me*), 2.20 (s, 3H, Ar^{Mes}-*Me*), 1.93 (m, 6H, Ad-*H*), 1.61 (m, 9H, Ad-*H*), 1.49-1.23 (m, 24H, Ad-*H*, overlaped with pentane-CH_2), 1.10 (m, 3H, Ad-*H*), 1.03 (m, 3H, Ad-*H*). ^{13}C NMR (126 MHz, $CDCl_3$): 158.5 (d, $J_{C\text{-}P}$ = 37.5 Hz, N_2C), 156.3 (d, $J_{C\text{-}P}$ = 31.9 Hz, N_2C), 145.9, 145.3, 143.6, 142.9, 138.3, 138.2, 137.0, 136.2, 136.1, 135.8, 135.42, 135.35, 135.33, 134.98, 134.97, 134.8, 132.3, 130.5, 130.4, 130.2, 129.8, 129.62, 129.59, 129.58, 129.3 (Ar^{Mes}-*C*), 138.0, 129.2, 128.4, 125.4 (Ar^{tol}-*C*), 110.3 (d, $J_{C\text{-}P}$ = 91.9 Hz, N_2C=*C*), 94.4 (d, $J_{C\text{-}P}$ = 71.9 Hz, N_2C=*C*), 54.0 (d, $J_{C\text{-}P}$ = 10.1 Hz), 53.2, 50.4, 45.7 (d, $J_{C\text{-}P}$ = 10.1 Hz), 43.4, 41.2, 40.1 (d, $J_{C\text{-}P}$ = 4.5 Hz), 39.3, 38.4, 36.9, 36.8, 36.7, 29.7, 29.6, 29.5, 22.5, 22.2, 21.8, 21.7, 21.5, 21.4, 21.2, 21.1, 21.0, 20.9, 20.8, 19.6, 19.5, 19.3, 18.2 (Saturated *C*), 34.3, 21.6, 14.2 (pentane-*C*). $^{31}P\{^1H\}$ NMR (243 MHz, $CDCl_3$): δ (ppm) 252.5 (dd, $^1J_{P\text{-}P}$ = 323 Hz, $^2J_{P\text{-}P}$ = 102 Hz, C=*P*), 36.6 (dd, $^1J_{P\text{-}P}$ = 215 Hz, $^2J_{P\text{-}P}$ = 102 Hz, *P*C=P), 23.3 (dd, $^1J_{P\text{-}P}$ = 323 Hz, $^1J_{P\text{-}P}$ = 215 Hz, C=P*P*).

MS (ESI) $[M+1]^+$ $C_{57}H_{80}N_4P_3^+$ calc. 913.5590 m/z, found 913.5597 m/z.

Synthesis of **4**. A benzene solution (3 mL) of IMes (30 mg, 0.0986 mmol) and *t*BuC≡P (29.6 mg, 0.296 mmol) was rapidly stirred at room temperature for 72 h. Benzene was removed in vacuo to afford a red oily product. Recrystallization in pentane at -20 °C over night gave **4** as orange crystals in 53 % (31.6 mg). Single crystals were obtained by slow evaporation of a concentrated pentane solution of **4**. ^{1}H NMR (500 MHz, $CDCl_3$): 6.90 (br, 2H, Ar^{Mes}-*H*), 6.81 (br, 2H, Ar^{Mes}-*H*), 6.16 (s, 2H, C*H*=C*H*), 2.29 (s, 6H, Me^{Mes}-*H*), 2.19 (br, 12H, Me^{Mes}-*H*), 1.49 (s, 9H, C*Me*$_3$), 1.42 (s, 9H, C*Me*$_3$), 0.85 (s, 9H, C*Me*$_3$). ^{13}C NMR (126 MHz, $CDCl_3$): 198.8 (ddd, $J_{C\text{-}P}$ = 21 Hz, $J_{C\text{-}P}$ = 62 Hz, $J_{C\text{-}P}$ = 72 Hz, cyclo-P_3C_2), 178.9 (ddd, $J_{C\text{-}P}$ = 9 Hz, $J_{C\text{-}P}$ = 26 Hz, $J_{C\text{-}P}$ = 34 Hz, cyclo-P_3C_2), 155.4 (d, $J_{C\text{-}P}$ = 24 Hz, N_2C=C), 138.6, 137.6, 137.0, 129.9, 129.8, 119.3 (Ar^{Mes}-*C* and *C*H=*C*H), 67.5 (dd, $J_{C\text{-}P}$ = 5 Hz, $J_{C\text{-}P}$ = 40 Hz, *C*Me$_3$), 40.7 (ddd, $J_{C\text{-}P}$ = 10 Hz, $J_{C\text{-}P}$ = 18 Hz, $J_{C\text{-}P}$ = 22 Hz, *C*Me$_3$), 39.9 (d, $J_{C\text{-}P}$ = 21 Hz, *C*Me$_3$), 36.6 (dd, $J_{C\text{-}P}$ = 7 Hz, $J_{C\text{-}P}$ = 12 Hz, C*Me*$_3$), 35.8 (dd (pseudo-t), $J_{C\text{-}P}$ = 10 Hz, C*Me*$_3$), 35.1 (s, Me^{Mes}-*C*), 33.5 (dd, $J_{C\text{-}P}$ = 2 Hz, $J_{C\text{-}P}$ = 4 Hz, C*Me*$_3$), 21.1 (s, Me^{Mes}-*C*), 19.0 (d(br), $J_{C\text{-}P}$ = 48 Hz, N_2C=*C*). ^{31}P{^{1}H} NMR (243 MHz, $CDCl_3$): δ (ppm) 216.2 (dd, $J_{P\text{-}P}$ = 16 Hz, $J_{P\text{-}P}$ = 40 Hz), 168.8 (dd, $J_{P\text{-}P}$ = 40 Hz, $J_{P\text{-}P}$ = 509 Hz), 119.6 (dd, $J_{P\text{-}P}$ = 16 Hz, $J_{P\text{-}P}$ = 509 Hz). ^{31}P NMR (243 MHz, $CDCl_3$): δ (ppm) 216.2 (dd, $J_{P\text{-}P}$ = 16 Hz, $J_{P\text{-}P}$ = 40 Hz), 168.8 (dd, $J_{P\text{-}P}$ = 40 Hz, $J_{P\text{-}P}$ = 509 Hz), 119.6 (dd, $J_{P\text{-}P}$ = 16 Hz, $J_{P\text{-}P}$ = 509 Hz). MS (ESI) [M+1] $C_{36}H_{52}N_2P_3^+$ calc. 605.3338 m/z, found 605.3333 m/z.

Synthesis of **5**. A benzene solution (1.5 mL) of IDipp (30 mg, 0.0773 mmol) and *t*BuC≡P (23.2 mg, 0.232 mmol) was sealed in a J-Young NMR tube at 60 °C for 7 days. The solution developed into deep red/purple color. Benzene was removed in vacuo to afford a red oily product. Recrystallization in pentane at -20 °C over 3 days gave **5** as tiny purple crystals suitable for X-ray diffraction, along with a large amount of unidentified red powders that prevents the isolation of **5** in analytically pure form.

2. Copies of NMR Spectra

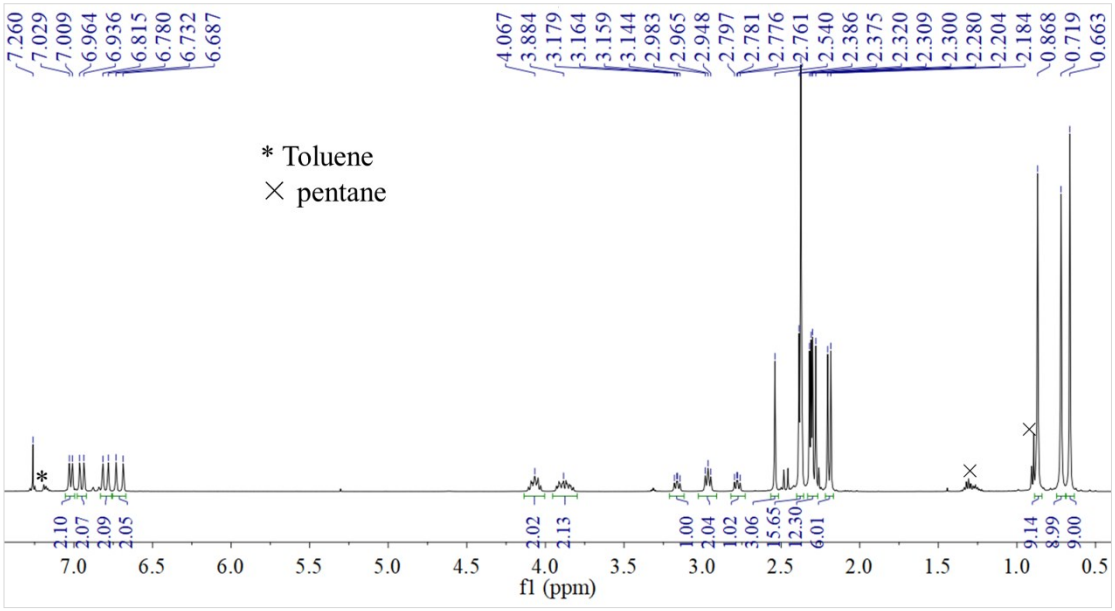

Figure S1. ^{1}H NMR spectrum of **2** (500 MHz, $CDCl_3$).

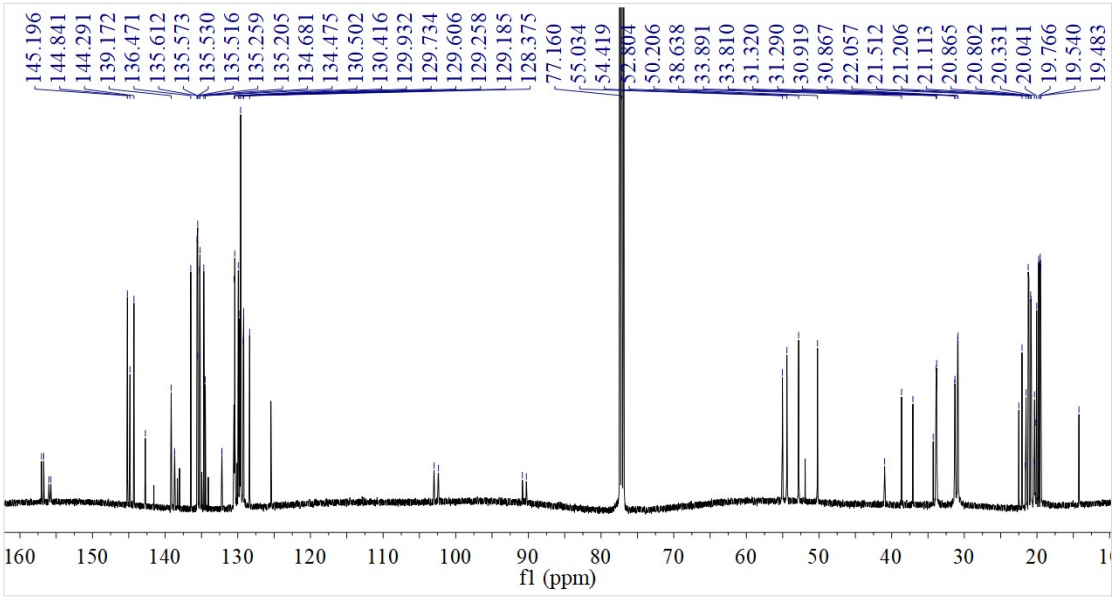

Figure S2. $^{13}C\{^{1}H\}$ NMR spectrum of **2** (126 MHz, $CDCl_3$).

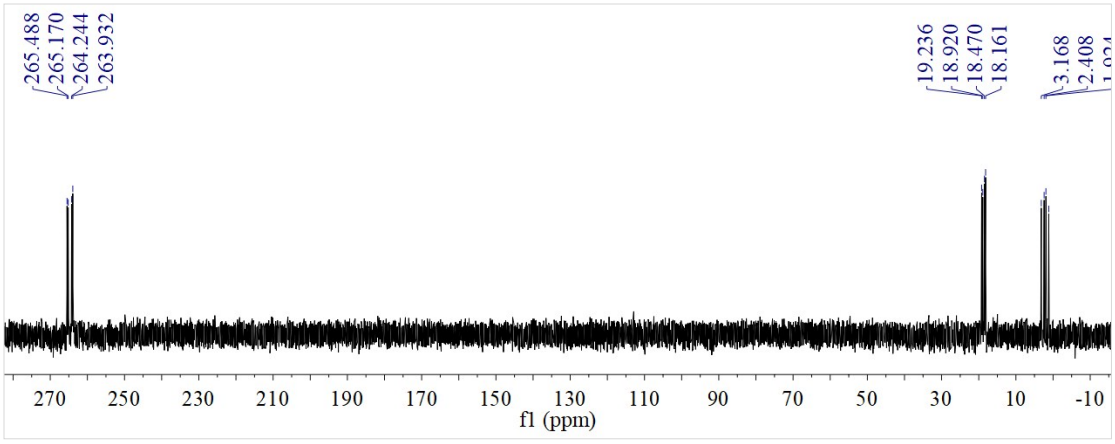

Figure S3. ^{31}P NMR spectrum of **2** (243 MHz, $CDCl_3$).

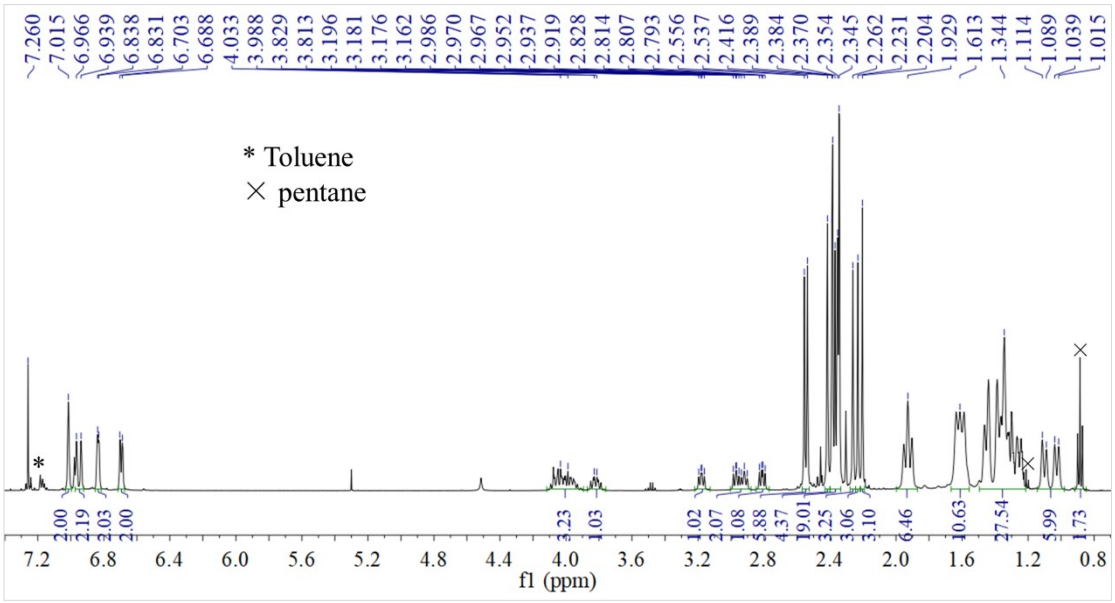

Figure S4. ^{1}H NMR spectrum of **3** (500 MHz, $CDCl_3$).

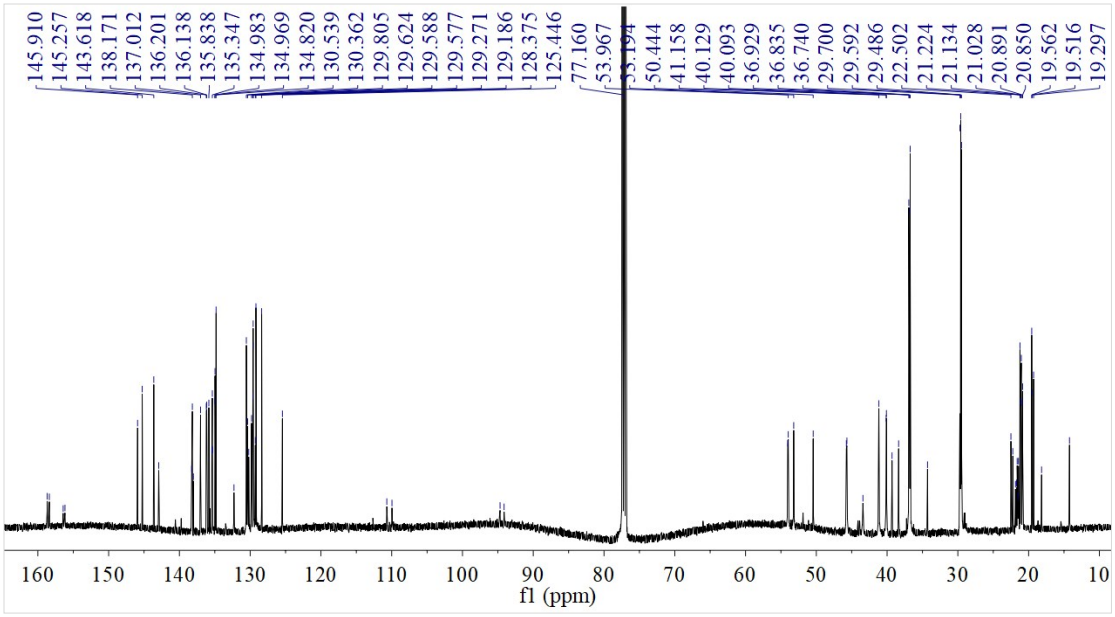

Figure S5. $^{13}C\{^{1}H\}$ NMR spectrum of **3** (126 MHz, $CDCl_3$).

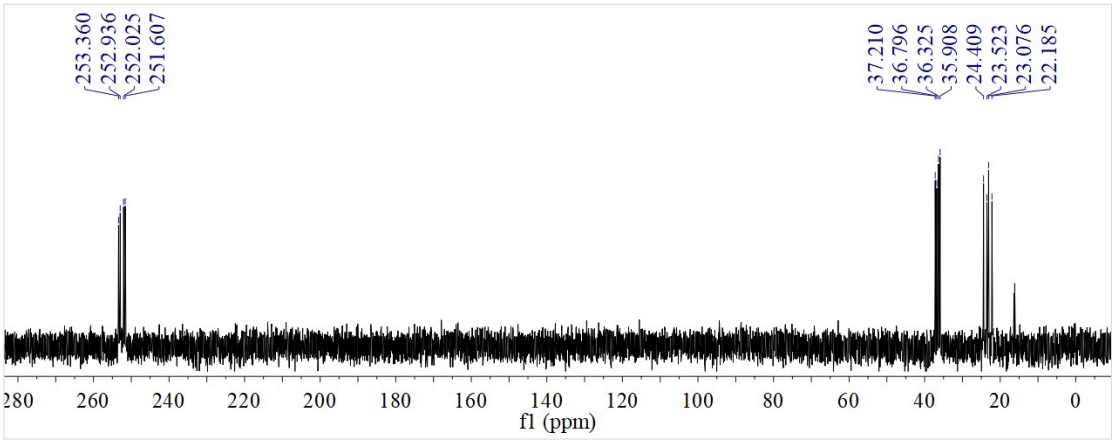

Figure S6. ^{31}P NMR spectrum of **3** (243 MHz, $CDCl_3$).

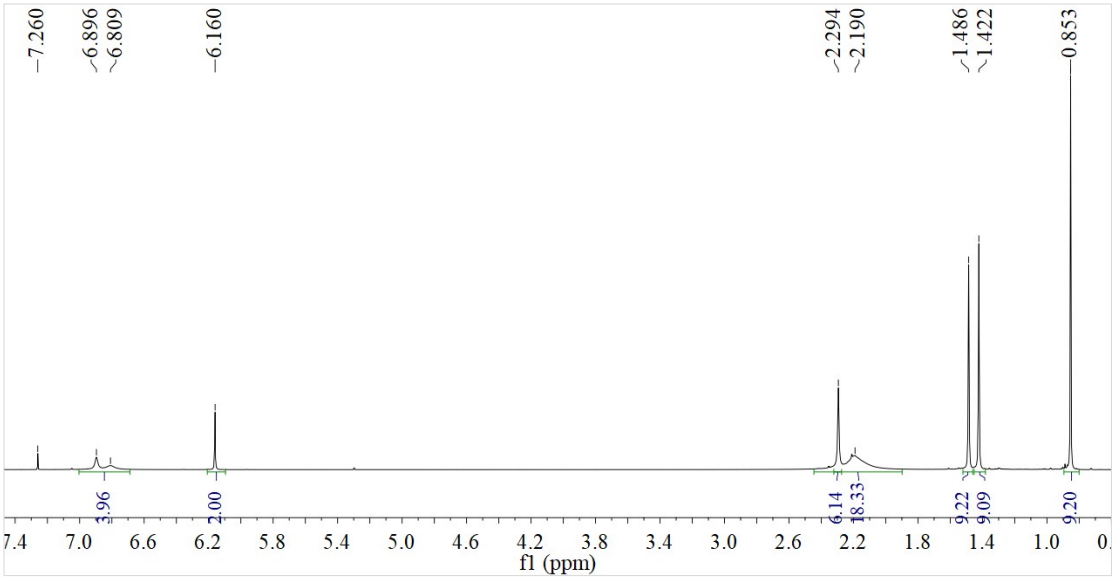

Figure S7. ^{1}H NMR spectrum of **4** (500 MHz, $CDCl_3$).

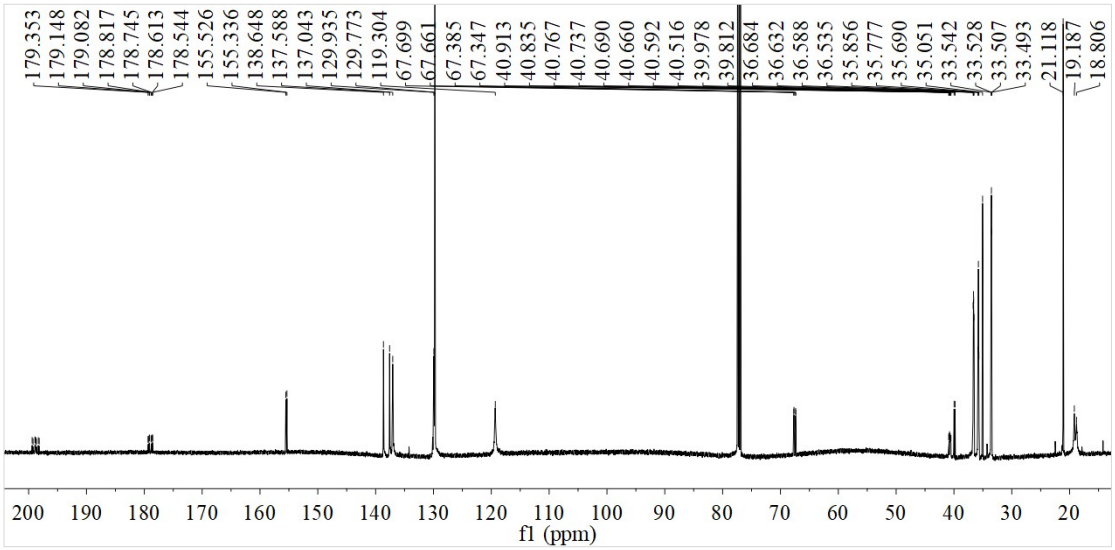

Figure S8. $^{13}C\{^{1}H\}$ NMR spectrum of **4** (126 MHz, $CDCl_3$).

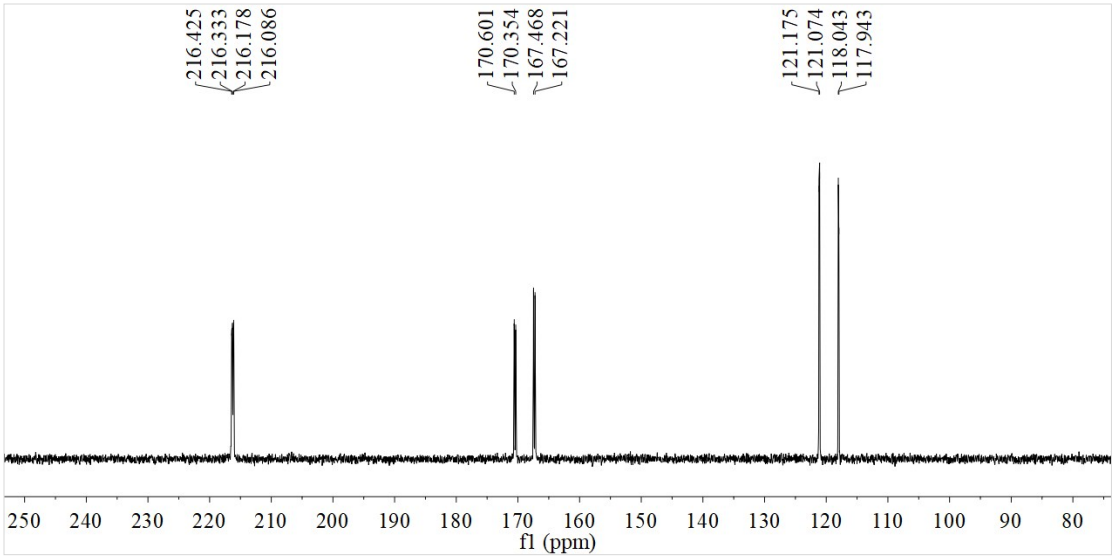

Figure S9. ^{31}P NMR spectrum of **4** (243 MHz, $CDCl_3$).

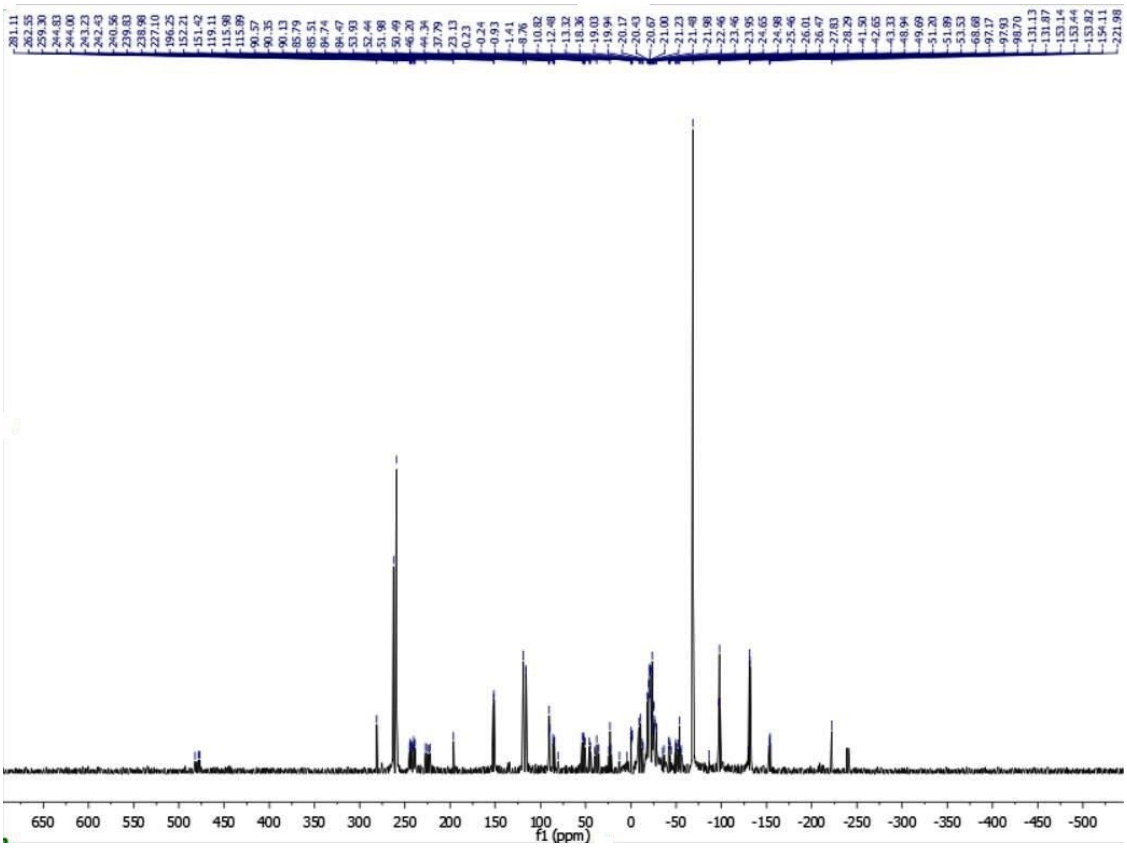

Figure S10. ^{31}P NMR spectrum of the reaction mixture of IDipp with *t*BuCP (162 MHz, C_6D_6).

3. Crystallographic Data

X-ray Data Collection and Reduction. Crystals were coated in Paratone-N oil in an N_2 filled glovebox, mounted on a MiTegen Micromount, and placed under a N_2 stream, thus maintaining a dry, O_2-free environment for each crystal. The data were collected on a Bruker Apex II diffractometer using a graphite monochromator with Mo Kα radiation (λ = 0.71073 Å). The data were collected at 150(2) K for all crystals. The frames were integrated with the Bruker SAINT software package using a narrow-frame algorithm. Data were corrected for absorption effects using the empirical multiscan method (SADABS).

The structures were solved by direct methods using XS and subjected to full-matrix least-squares refinement on F^2 using XL as implemented in the SHELXTL suite of programs. All non-hydrogen atoms were refined with anisotropically thermal parameters. Carbon bound hydrogen atoms were placed in geometrically calculated positions and refined using an appropriate riding model and coupled isotropic thermal parameters.

For compound **5**, it was modeled as a benzene molecule located at the inversion center, whereas another pentane molecule was disordered with a ratio of 54 % and 46 %, while the latter pentane molecule was also disordered over another inversion center. The data was flagged by CheckCIF with two Level B alter which is due to the poor diffraction of the data set collected (R_{int} = 11.8 % with resolution as 0.84, and a I/s = 1.26 for the 0.94 to 0.84 shell). All attempts to obtain a better dataset were unsuccessful.

Table S1**.** Summary of crystallographic data for compounds **3**, **4** and **5.**

	3	**4**	**5**
empirical formula	C76 H98 Cl3 N4 P 3	C36 H51 N2 P3	C94.71 H147.50 N4 P6
formula weight	1266.84	604.69	1528.00
crystal system	Triclinic	Monoclinic	Triclinic
space group	$P\bar{1}$	$P2_1/c$	$P\bar{1}$
a (Å)	12.611(1)	14.690(8)	12.20(4)
b (Å)	13.708(1)	12.143(7)	13.55(5)
c (Å)	22.042(2)	19.67(1)	17.59(6)
α (deg.)	91.588(2)		104.73(8)
β (deg.)	97.707(2)	95.57(1)	106.61(9)
γ (deg.)	116.651(2)		102.8(1)
vol (Å^3)	3357.8(5)	3493(3)	2254(16)
Z	2	4	1
ρ (calcd) (Mg·cm^3)	1.253	1.150	0.993
μ (mm^{-1})	0.255	0.196	0.146
F(000)	1356	1304	834
Theta range (°)	2.632 to 25.766	2.389 to 25.093	2.535 to 25.676
T(K)	150(2)	150(2)	150(2)
reflections collected	52209	52295	50094
unique reflections	12770	6197	8436
R_{int}	0.0476	0.0846	0.1182
GOF (F^2)	1.022	1.065	1.040
R1 indices [I>2σ(I)]	0.0500	0.0573	0.0808
wR2 indices (all data)	0.1418	0.1686	0.2549
Largest diff. peak and hole (e. Å^{-3})	0.774 & -0.702	0.709 & -0.394	0.748 & -0.351
CCDC No.	1873432	1919816	1919815

3. Computational Details

Calculations were carried out with the Gaussian 09 package.[S4] Geometry optimizations were performed with the M06-2X functional.[S5] The Def2-SVP basis set was used for all the atoms. Frequency calculations at the same level of theory were performed to identify the number of imaginary frequencies (zero for local minimum and one for transition states) and provide the thermal corrections of Gibbs free energy. Transition states were submitted to intrinsic reaction coordinate (IRC) calculations to determine two corresponding minima.

The single-point energy calculations were performed at the M06-2X/Def2-TZVP level of theory for solution-phase (benzene). The gas-phase geometry was used for all the solution phase calculations. The SMD method was used with the corresponding solvent, while Bondi radii[S6] were chosen as the atomic radii to define the molecular cavity. The Gibbs energy corrections from frequency calculations were added to the single-point energies to obtain the Gibbs free energies in solution. All the solution-phase free energies reported in the paper correspond to the reference state of 1 mol/L, 298K.

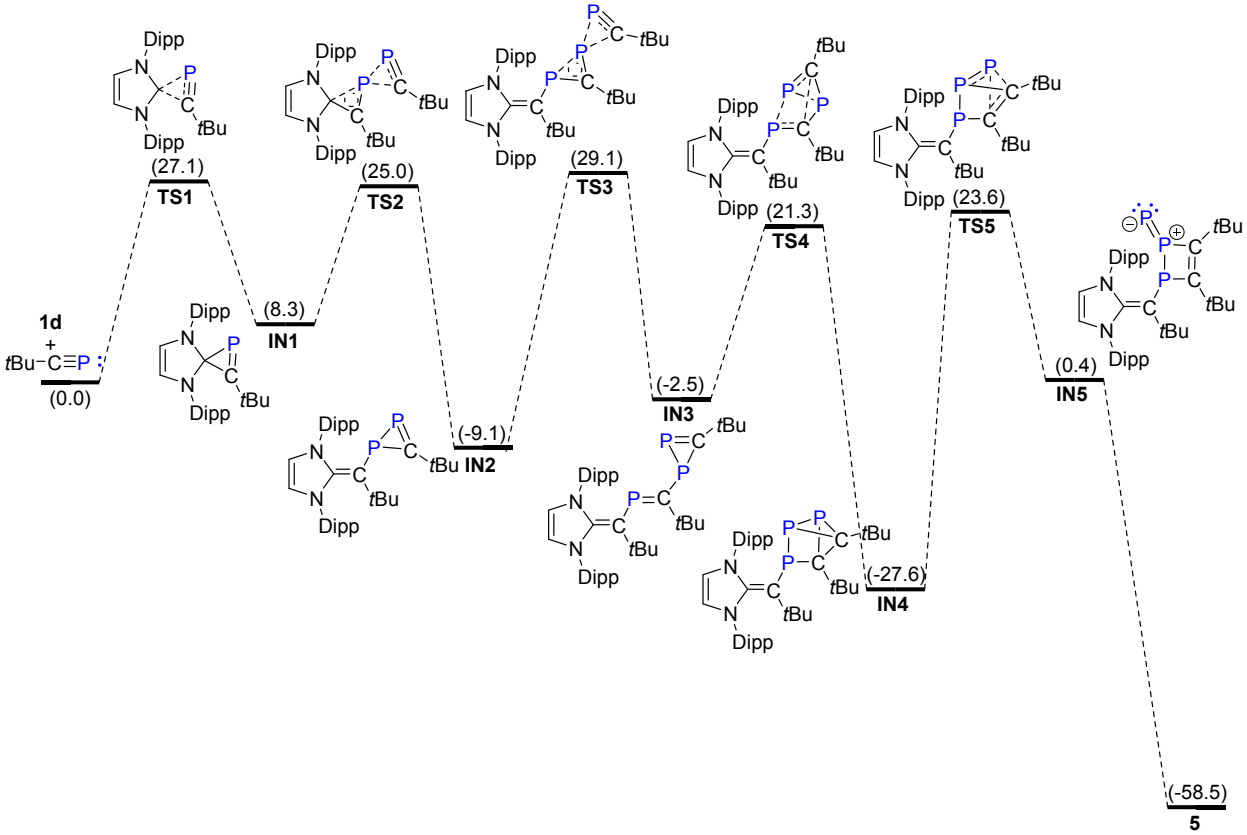

Figure S11. Free energy profile for the plausible mechanism leading to **5**. Energies are given in kcal mol^{-1}.

Table S2. Energies of Intermediates and Transition States.

Species	Thermal Corrections of Gibbs Free Energies (Hartree)	Solvation Energies (Hartree)
*t*BuCP	0.095966	-537.2298223
1a	0.318354	-846.6995563
TS(1a)	0.439621	-1383.908138
IN(1a)	0.445798	-1383.948012
1b	0.29494	-845.5060255
TS(1b)	0.416426	-1382.712415
IN(1b)	0.422114	-1382.748441
1c	0.590921	-1109.394921
TS(1c)	0.714648	-1646.576496
IN(1c)	0.717262	-1646.652665
1d	0.512553	-1159.963268
TS1	0.63311	-1697.174432
IN1	0.635661	-1697.20696
TS2	0.755871	-2234.434406
IN2	0.760296	-2234.493226
TS3	0.879547	-2771.685502
IN3	0.879554	-2771.735878
TS4	0.88086	-2771.699223
IN4	0.887262	-2771.783607
TS5	0.886494	-2771.701246
IN5	0.885307	-2771.737226
5	1.802832	-5543.600488

Cartesian Coordinates:

*t*BuCP:

6	-1.539263	0.885482	-0.000022
6	-1.037034	-0.568609	0.000115
1	-1.393834	-1.104138	-0.890744
1	0.063511	-0.581211	-0.000055
1	-1.393554	-1.103879	0.891242
6	-1.036364	1.612323	1.258853
1	0.064192	1.618624	1.268944
1	-1.392991	2.651698	1.277151
1	-1.392462	1.108047	2.167980
6	-1.036092	1.612197	-1.258862
1	-1.392129	1.107917	-2.168011
1	-1.392574	2.651619	-1.277266
1	0.064467	1.618347	-1.268802
6	-3.013944	0.885472	-0.000183
15	-4.556284	0.884773	-0.000347

1a:

6	-0.784217	0.371233	-0.682250
6	0.740806	0.469047	-0.660458
6	-0.167710	2.532177	0.089402
1	-1.182007	0.047920	-1.653722
1	-1.177218	-0.310332	0.091349
1	1.178867	0.488669	-1.672959
1	1.219307	-0.344421	-0.098320
7	-1.170599	1.759116	-0.371394
7	0.940651	1.772492	-0.003324
6	2.254572	2.243551	0.279694
6	2.823325	3.229579	-0.545255
6	2.959816	1.694578	1.362453
6	4.123214	3.657386	-0.266269
6	4.260325	2.146322	1.607161
6	4.840642	3.118326	0.798951
1	4.576517	4.423457	-0.898666
1	4.815727	1.733598	2.452131
6	-2.544472	2.132103	-0.329150
6	-3.246628	2.300215	-1.533551
6	-3.173104	2.298248	0.917704
6	-4.603186	2.634367	-1.472359
6	-4.527991	2.636110	0.936996
6	-5.241848	2.799929	-0.247863
1	-5.157145	2.776848	-2.402694
1	-5.027360	2.769472	1.898860
6	2.039570	3.816752	-1.687784
1	1.604294	3.027747	-2.319497
1	1.198557	4.414626	-1.308601
1	2.679780	4.451175	-2.313933
6	2.327441	0.657273	2.252491
1	1.249667	0.840459	2.362173
1	2.455851	-0.358353	1.844261
1	2.789460	0.668531	3.248141
6	-2.553705	2.141400	-2.861252
1	-1.512560	2.487702	-2.802843
1	-2.539598	1.088430	-3.186482
1	-3.073147	2.714675	-3.640015
6	-2.397172	2.127908	2.195695
1	-1.844981	1.175827	2.201587
1	-1.648150	2.925824	2.299482
1	-3.068012	2.146545	3.063953
1	-6.300322	3.063180	-0.215486
1	5.855745	3.462758	1.002808

TS(1a):

6	1.070476	2.508560	-1.292537
6	2.594407	2.690118	-1.300862
6	1.612276	4.529671	-0.193446
1	0.651829	2.397957	-2.303681
1	0.746036	1.641534	-0.692949
1	2.988632	2.855758	-2.317203
1	3.135307	1.840095	-0.859296
7	0.614047	3.753454	-0.659355
7	2.766731	3.898423	-0.482700
6	4.050400	4.293746	0.001477
6	4.947911	4.991038	-0.818045
6	4.393571	3.926227	1.318560
6	6.178104	5.378613	-0.269481
6	5.626259	4.329709	1.828033
6	6.512318	5.065142	1.041141
1	6.879236	5.936848	-0.893935
1	5.895120	4.061109	2.851632
6	-0.769689	3.977331	-0.401667
6	-1.626914	4.335253	-1.453954
6	-1.252773	3.785936	0.906749
6	-2.976905	4.559706	-1.160198
6	-2.605091	4.021522	1.159024
6	-3.462456	4.415988	0.134235
1	-3.650213	4.855451	-1.967567
1	-2.989181	3.887420	2.172272
6	4.651190	5.324494	-2.255362
1	3.673636	4.949552	-2.576414
1	4.639424	6.414680	-2.401028
1	5.431454	4.907973	-2.910167
6	3.439513	3.115916	2.153558
1	2.530195	3.688346	2.387097
1	3.114137	2.209835	1.619721
1	3.909050	2.810915	3.097124
6	-1.136574	4.440874	-2.873521
1	-0.056064	4.625132	-2.914935
1	-1.360645	3.515005	-3.428885
1	-1.640037	5.265774	-3.396162
6	-0.332873	3.343009	2.012909
1	0.336444	2.536771	1.679486
1	0.311098	4.171332	2.347693
1	-0.909407	2.987108	2.876282
6	1.542473	6.606657	-0.607713
6	1.482526	7.304459	0.719413
6	2.558151	6.817095	1.694745
1	3.562994	6.881470	1.249052

1	2.537150	7.434299	2.606302
1	2.374968	5.772018	1.975766
6	1.704854	8.803740	0.450951
1	0.949542	9.187431	-0.248286
1	1.637833	9.365060	1.396074
1	2.696268	8.972315	0.006966
6	0.091196	7.108987	1.336875
1	0.023467	7.648774	2.294523
1	-0.689847	7.485189	0.659980
1	-0.103589	6.044781	1.517634
15	1.529800	6.765442	-2.185965
1	-4.516733	4.601605	0.345725
1	7.472736	5.382300	1.450740

IN(1a):

6	1.131034	2.434213	-0.842867
6	2.522518	2.753581	-1.426778
6	1.571211	4.789911	-0.768942
1	0.473889	1.975889	-1.600607
1	1.186126	1.733174	0.008566
1	2.493108	2.693629	-2.529949
1	3.303484	2.064030	-1.080160
7	0.642060	3.735766	-0.409063
7	2.805564	4.110356	-1.000810
6	3.987099	4.452031	-0.286934
6	4.849480	5.424533	-0.828504
6	4.281329	3.841996	0.951159
6	5.993069	5.788562	-0.105734
6	5.445097	4.210516	1.627693
6	6.294621	5.185533	1.109970
1	6.663581	6.544924	-0.520055
1	5.670771	3.743901	2.589074
6	-0.758905	3.960375	-0.325218
6	-1.561954	4.068992	-1.475712
6	-1.333128	4.042356	0.959742
6	-2.929101	4.330957	-1.316121
6	-2.697973	4.303009	1.080803
6	-3.492892	4.460473	-0.053325
1	-3.555897	4.425819	-2.206068
1	-3.142534	4.376395	2.075569
6	4.573131	6.063934	-2.163625
1	3.920387	5.425066	-2.772401
1	4.060721	7.031159	-2.042565
1	5.512088	6.249206	-2.703405
6	3.334081	2.850123	1.573530
1	2.289684	3.160249	1.424346

1	3.446134	1.844468	1.137396
1	3.524863	2.762714	2.651198
6	-1.025091	3.852135	-2.869758
1	0.067588	3.783798	-2.894996
1	-1.441520	2.923022	-3.291040
1	-1.324837	4.675941	-3.533936
6	-0.481159	3.800464	2.176607
1	-0.144983	2.752128	2.210369
1	0.424338	4.420498	2.161427
1	-1.040074	4.011411	3.097831
6	1.490880	6.170678	-0.312274
6	1.652557	7.072564	0.891206
6	2.556228	6.461837	1.966418
1	3.594219	6.383607	1.613035
1	2.544902	7.097197	2.865552
1	2.222364	5.453951	2.255999
6	2.268185	8.391794	0.407097
1	1.649902	8.842574	-0.383941
1	2.343124	9.107340	1.239954
1	3.277806	8.219100	0.003553
6	0.254945	7.362918	1.468637
1	0.337527	8.073147	2.306130
1	-0.393422	7.801193	0.696373
1	-0.231379	6.448782	1.835350
15	1.033616	6.281059	-1.905945
1	-4.558846	4.669247	0.051005
1	7.193749	5.473525	1.657172

1b:

6	-0.712914	0.525231	-0.693275
6	0.639040	0.574674	-0.615955
6	-0.158580	2.582745	0.174633
7	-1.165602	1.746203	-0.208824
7	0.942639	1.823843	-0.088359
6	2.282272	2.279585	0.125887
6	2.916677	2.997003	-0.896403
6	2.909358	1.988251	1.343715
6	4.231425	3.417383	-0.680836
6	4.224890	2.424913	1.521978
6	4.881954	3.130429	0.516898
1	4.746111	3.978412	-1.463361
1	4.734165	2.211300	2.463753
6	-2.550773	2.098202	-0.142346
6	-3.073536	2.961252	-1.115259
6	-3.335428	1.562391	0.887215
6	-4.433572	3.274825	-1.046783

6	-4.691659	1.898688	0.920193
6	-5.237850	2.745091	-0.041067
1	-4.861912	3.945555	-1.794238
1	-5.321045	1.495894	1.716126
6	2.176161	3.318300	-2.166020
1	1.800915	2.404985	-2.652029
1	1.299374	3.944771	-1.942875
1	2.823328	3.851069	-2.873741
6	2.159310	1.256316	2.423442
1	1.280649	1.841281	2.734824
1	1.786987	0.284663	2.065616
1	2.798891	1.084171	3.297928
6	-2.181583	3.542356	-2.177920
1	-1.462182	4.241227	-1.725953
1	-1.593682	2.757494	-2.676984
1	-2.770893	4.076238	-2.933859
6	-2.716230	0.675561	1.934396
1	-2.394039	-0.287992	1.511175
1	-1.821820	1.153102	2.361305
1	-3.429659	0.472610	2.742739
1	-1.386244	-0.248644	-1.050344
1	1.403704	-0.147635	-0.886919
1	-6.298367	2.998956	-0.002340
1	5.909160	3.464916	0.670408

TS(1b):

6	1.164643	2.640749	-1.256205
6	2.513260	2.712660	-1.129802
6	1.636095	4.539456	-0.086261
7	0.651039	3.746563	-0.594846
7	2.776354	3.859196	-0.394966
6	4.079741	4.247288	0.056839
6	5.005969	4.799259	-0.836869
6	4.388851	4.026005	1.412251
6	6.250774	5.189511	-0.324826
6	5.638736	4.430383	1.878779
6	6.562540	5.021546	1.017733
1	6.982114	5.630329	-1.005863
1	5.890888	4.271411	2.928952
6	-0.747218	3.981309	-0.383249
6	-1.549613	4.481180	-1.415942
6	-1.269777	3.664817	0.884689
6	-2.901245	4.720328	-1.130840
6	-2.619122	3.919162	1.124693
6	-3.429960	4.455940	0.125271
1	-3.541339	5.119113	-1.920789

1	-3.038850	3.686545	2.105222
6	4.734157	4.962615	-2.309027
1	3.743875	4.593727	-2.598123
1	4.779857	6.025506	-2.588083
1	5.500957	4.431559	-2.893103
6	3.398408	3.363550	2.331678
1	2.572421	4.046237	2.582279
1	2.946646	2.479378	1.858384
1	3.885504	3.054247	3.264860
6	-1.031984	4.748244	-2.804177
1	0.019113	4.462216	-2.923262
1	-1.639855	4.205337	-3.543274
1	-1.103475	5.821133	-3.035685
6	-0.393645	3.064118	1.950416
1	0.206893	2.233887	1.550034
1	0.315475	3.807148	2.345476
1	-1.000975	2.689296	2.783721
6	1.572099	6.554760	-0.617872
6	1.389370	7.304632	0.669606
6	2.590185	7.086668	1.596919
1	3.531609	7.354508	1.093289
1	2.483941	7.703195	2.503237
1	2.650177	6.032472	1.894777
6	1.294009	8.798506	0.314146
1	0.441459	8.982060	-0.354419
1	1.164215	9.393869	1.231590
1	2.205467	9.130465	-0.201960
6	0.101148	6.879543	1.383149
1	-0.061808	7.511088	2.270379
1	-0.770503	6.973000	0.716946
1	0.173778	5.833385	1.706644
15	1.746494	6.658372	-2.193382
1	0.526212	1.902753	-1.732760
1	3.302672	2.050387	-1.472681
1	-4.484103	4.653516	0.326342
1	7.536093	5.337775	1.395544

IN(1b):

6	1.172940	2.619515	-0.705101
6	2.515310	2.620931	-0.554428
6	1.795796	4.730002	-0.157495
7	0.733511	3.910335	-0.441390
7	2.891811	3.903155	-0.199714
6	4.269982	4.277672	-0.051790
6	5.063277	4.343755	-1.209764
6	4.792100	4.477557	1.231905

6	6.412271	4.667278	-1.051513
6	6.149237	4.796886	1.342317
6	6.951298	4.899640	0.211446
1	7.044880	4.736764	-1.938241
1	6.576448	4.957140	2.334202
6	-0.654279	4.266045	-0.502560
6	-1.132336	5.045327	-1.566063
6	-1.506172	3.740369	0.487535
6	-2.498252	5.354467	-1.577769
6	-2.859545	4.074438	0.432493
6	-3.352196	4.886091	-0.586993
1	-2.888277	5.969990	-2.390762
1	-3.532708	3.692378	1.202218
6	4.482562	4.068050	-2.569455
1	3.556949	4.651130	-2.695502
1	5.191678	4.362409	-3.353283
1	4.254717	2.999073	-2.703825
6	3.935001	4.356901	2.460460
1	3.418809	5.306537	2.662523
1	3.164962	3.580862	2.344760
1	4.548863	4.113923	3.337152
6	-0.248034	5.542036	-2.675673
1	0.685374	4.970817	-2.752891
1	-0.783648	5.489972	-3.633371
1	0.033642	6.591334	-2.495533
6	-0.987947	2.830778	1.571799
1	-0.950664	1.785998	1.225298
1	0.026984	3.108202	1.885562
1	-1.647103	2.865867	2.448849
6	1.786463	6.177652	0.037980
6	1.062554	6.886733	1.210916
6	2.060450	7.863252	1.853329
1	2.450737	8.548655	1.087877
1	1.569221	8.449501	2.646147
1	2.916893	7.329520	2.293454
6	-0.122353	7.706820	0.678907
1	-0.892041	7.051988	0.241552
1	-0.587397	8.287958	1.491675
1	0.232104	8.400256	-0.097811
6	0.548631	5.919768	2.283267
1	0.249817	6.480381	3.182603
1	-0.337940	5.373133	1.937005
1	1.314888	5.190054	2.583898
15	2.566254	6.931828	-1.258769
1	0.481585	1.831622	-0.984377
1	3.249655	1.829923	-0.666516

1	-4.412239	5.142868	-0.614166
1	8.007840	5.151565	0.314405

1c:

7	1.787077	14.433274	1.588519
6	1.709354	13.279564	0.975607
6	0.890852	12.371080	1.879856
6	0.680959	13.139586	3.213361
1	-0.375203	13.125724	3.518909
1	1.253970	12.685462	4.033495
6	1.155929	14.580181	2.961776
6	-0.483845	12.174473	1.192926
1	-1.145656	11.666970	1.919696
1	-0.937953	13.162674	0.998759
6	-0.459404	11.350394	-0.092075
1	0.181862	11.875957	-0.819219
6	0.179323	9.993491	0.199579
1	0.230681	9.393768	-0.723287
1	-0.468348	9.437867	0.903287
6	1.571623	10.165437	0.796286
1	2.028283	9.181327	0.991353
1	2.206318	10.677536	0.057419
6	1.559840	10.987596	2.090205
1	0.900260	10.459874	2.806536
6	2.401419	15.585211	0.973998
6	3.765625	15.849995	1.189698
6	4.298562	17.033728	0.666940
1	5.355157	17.257904	0.826954
6	3.514925	17.910783	-0.072772
1	3.945833	18.832956	-0.465878
6	2.190658	17.586112	-0.350244
1	1.596530	18.246000	-0.984573
6	1.614206	16.416171	0.151497
6	2.190317	15.044939	3.984388
1	2.588575	16.037931	3.726966
1	3.026859	14.336369	4.062191
1	1.711921	15.114969	4.972131
6	-0.000551	15.581830	2.935245
1	0.327624	16.562725	2.559554
1	-0.378470	15.717569	3.958841
1	-0.835026	15.225780	2.316129
6	-1.860752	11.207097	-0.675088
1	-2.527771	10.695975	0.038131
1	-1.847148	10.616893	-1.603240
1	-2.302491	12.188870	-0.903470
6	2.964628	11.068016	2.741223

1	2.993257	11.977808	3.366231
6	4.107744	11.190492	1.731825
1	4.263527	10.243879	1.192287
1	5.047362	11.432858	2.252044
1	3.905800	11.975722	0.988871
6	3.201273	9.876861	3.670029
1	4.205782	9.914001	4.117388
1	3.120470	8.929213	3.113640
1	2.463979	9.850132	4.486380
6	4.703405	14.836229	1.823660
1	4.096611	14.025536	2.249277
6	5.567204	14.215489	0.717792
1	6.209138	13.419707	1.123870
1	6.215421	14.978153	0.258778
1	4.932999	13.786427	-0.071191
6	5.576325	15.422747	2.934048
1	4.972315	15.888460	3.725310
1	6.265140	16.186482	2.542105
1	6.190341	14.632253	3.390716
6	0.229926	15.996352	-0.313481
1	-0.146741	15.240408	0.383521
6	-0.778689	17.143770	-0.350577
1	-1.780103	16.757929	-0.591490
1	-0.524406	17.885492	-1.122338
1	-0.835375	17.665580	0.616316
6	0.352819	15.308100	-1.679173
1	0.743802	16.010225	-2.432026
1	-0.630012	14.947938	-2.020609
1	1.039136	14.451698	-1.609810

TS(1c):

7	1.663919	14.604212	1.911066
6	0.486663	12.652844	2.362825
6	0.396044	13.613131	3.579720
1	-0.561750	14.157425	3.545426
1	0.433278	13.092912	4.546399
6	1.534827	14.619492	3.420981
6	-0.935278	12.540640	1.735673
1	-1.633162	12.262980	2.548042
1	-1.259223	13.529436	1.375522
6	-1.047458	11.534436	0.594313
1	-0.344250	11.870678	-0.174937
6	-0.588315	10.141910	1.019372
1	-0.590406	9.470757	0.144916
1	-1.311183	9.722298	1.743835
6	0.794998	10.192161	1.661075

1	1.073772	9.189253	2.020835
1	1.548716	10.486599	0.914794
6	0.793976	11.181045	2.830123
1	-0.153919	10.972616	3.357966
6	1.991501	15.821511	1.200570
6	3.320556	16.241911	1.006852
6	3.545450	17.424328	0.289813
1	4.572708	17.756225	0.127202
6	2.497251	18.174501	-0.222013
1	2.697827	19.085702	-0.787565
6	1.188534	17.762646	0.004120
1	0.363255	18.359704	-0.387363
6	0.910432	16.600175	0.725386
6	2.827737	14.120574	4.065774
1	3.613452	14.883685	4.035028
1	3.193998	13.219430	3.553090
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6	1.187223	16.001278	3.961074
1	1.993717	16.723046	3.767458
1	1.047092	15.928338	5.049462
1	0.259332	16.394781	3.524026
6	-2.453005	11.521876	0.005484
1	-3.191200	11.207862	0.761437
1	-2.522272	10.822182	-0.840778
1	-2.744418	12.520296	-0.355318
6	1.834078	10.851078	3.943912
1	1.945804	11.734915	4.587639
6	3.236846	10.413885	3.516048
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1	1.043278	8.834630	4.245790
1	0.271430	10.067774	5.268232
6	4.532692	15.504348	1.547159
1	4.182662	14.553494	1.968214
6	5.546851	15.172178	0.448148
1	6.353773	14.545758	0.857734
1	6.008093	16.083970	0.038699
1	5.075982	14.616770	-0.373448
6	5.213202	16.325758	2.650252
1	4.500182	16.663698	3.416163
1	5.684394	17.225660	2.225790
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6	-0.545227	16.209309	0.933871

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6	-1.126216	15.551244	-0.321652
1	-1.053596	16.230007	-1.185745
1	-2.187415	15.299589	-0.169952
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6	2.388325	13.127578	-1.645069
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6	0.832730	14.549247	2.463447
6	-0.383335	11.863419	1.160106
1	-0.909139	11.508232	2.066319
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6	1.690960	9.850227	0.758303
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6	1.838128	10.909522	1.860889
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6	3.766613	15.684633	0.938032
6	4.561501	16.638272	0.292815
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6	2.619439	17.714331	-0.602449
1	2.171313	18.533278	-1.168645
6	1.786765	16.761173	-0.007359
6	1.450344	15.458065	3.526297
1	1.520475	16.497871	3.172607
1	2.451294	15.119978	3.816175
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6	-0.660285	14.933770	2.362789
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1	5.494748	13.372250	0.698770
6	4.858533	15.722229	3.172319
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7	3.659084	0.916773	-0.239612
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6	5.837071	1.795325	-0.911408
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1	-2.425296	2.051435	-2.355855
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6	0.230807	0.152123	1.970434
1	1.185690	-0.281445	1.634624
1	1.505230	-1.302435	-1.287077
1	4.268483	-1.051299	-0.939809
1	-3.664986	1.454848	-0.302572
1	8.486542	2.651151	1.058884
6	6.518653	1.720842	-3.368710
1	6.111832	1.608348	-4.383666
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6	4.540414	3.083653	-2.607399
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1	4.150295	3.094829	-3.636677
1	3.693801	3.143201	-1.908502
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1	3.985126	-0.931284	1.763173
1	5.235876	-0.834180	3.028142
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6	4.603360	1.735753	3.914186
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6	-0.512998	-0.922718	2.762856
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1	-0.797742	-1.772102	2.125289
1	0.127014	-1.300047	3.573680
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1	1.112470	2.121175	2.277632
1	-0.364376	1.821727	3.233622
6	0.709081	3.389304	-2.602035
1	1.333287	3.726882	-3.443189
1	-0.183260	4.032965	-2.554157
1	1.275046	3.514311	-1.667524
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7	2.772476	4.052207	-0.319737
6	4.078955	4.443575	0.129655
6	5.050124	4.807284	-0.816162
6	4.353771	4.415679	1.515585
6	6.324927	5.149958	-0.347204
6	5.634902	4.782088	1.930357
6	6.615604	5.143586	1.008835
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6	-1.559367	4.661598	-1.360337
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6	-2.912456	4.881497	-1.074195
6	-2.623870	4.042957	1.167273
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6	4.784749	4.815034	-2.312366
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1	-0.909682	6.514076	-4.227094
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1	-1.150449	7.092335	-2.561932
6	-1.498894	3.823316	-3.716670
1	-2.597624	3.812305	-3.789380
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7	2.791354	4.112080	-0.314586
6	4.105308	4.523947	0.087048
6	5.058319	4.833376	-0.894967
6	4.408814	4.537933	1.465268
6	6.340415	5.196855	-0.463971
6	5.698544	4.913374	1.843549
6	6.656061	5.245302	0.886977
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6	-3.467945	4.665221	0.017348
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1	-2.353630	6.646852	-3.480072
1	-0.943229	7.266747	-2.572826
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1	-2.537876	4.083686	-3.924280
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6	-3.035028	8.609778	-5.691174
6	-0.144536	6.649028	-7.862750
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1	-2.771655	3.695276	-0.486233
1	-4.127978	4.767699	-0.911207
6	0.489467	7.720241	-3.184355
1	0.272113	8.766092	-3.447151
1	0.157553	7.554306	-2.148788
1	1.580811	7.575662	-3.208702
6	-1.298514	5.308113	-9.793217
1	-1.068988	4.442728	-9.157473
1	-2.047636	4.993102	-10.534558
1	-0.378910	5.579721	-10.334194
6	-5.481293	4.756548	-7.609691
1	-6.009735	3.820148	-7.847260
1	-5.542528	5.412146	-8.492205
1	-4.422714	4.516761	-7.444787
6	-7.114994	8.851490	-1.415250
1	-6.724289	9.751968	-1.913129
1	-8.212948	8.869954	-1.500615
1	-6.858615	8.902724	-0.345790
6	0.162119	5.302177	-3.767438
1	1.233107	5.138883	-3.965641
1	-0.024255	5.110682	-2.699622
1	-0.410303	4.564588	-4.347085
6	-2.185408	7.647477	-9.933949
1	-1.335483	7.924991	-10.575304
1	-3.006096	7.334501	-10.595855
1	-2.507309	8.544272	-9.387590

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15	-4.469872	7.783476	-0.320894
15	-3.962242	7.072490	-2.945201
15	-2.594821	7.846552	-1.411870
7	-2.018713	5.784628	-6.059940
7	-3.670121	4.766833	-5.051261
6	-4.881926	3.612926	-3.289439
6	-0.890760	6.602999	-6.432242
6	-3.515408	8.640854	-5.286672
6	-0.671719	6.825887	-7.806692
6	-1.910398	4.419821	-6.326012
1	-1.088435	4.033764	-6.917616
6	-3.614637	7.219298	-4.675151
6	-4.925542	4.375360	-4.470616
6	-2.908350	3.793646	-5.682673
1	-3.192671	2.747744	-5.644388
6	0.034682	7.011442	-5.448495
6	0.499445	7.490265	-8.185327
1	0.689160	7.679101	-9.243460

6	-6.119768	4.594181	-5.189538
6	-3.605931	3.443335	-2.478750
1	-2.854044	4.136171	-2.887207
6	-5.296994	7.490400	-1.969058
6	-7.278096	3.979030	-4.706022
1	-8.222601	4.126044	-5.229099
6	-3.124039	6.026546	-5.248439
6	-3.273890	10.457027	-0.186123
6	-6.149153	5.473509	-6.434494
1	-5.568023	6.375354	-6.180028
6	-6.064731	2.997517	-2.866365
1	-6.056800	2.387974	-1.960695
6	1.182387	7.679709	-5.884126
1	1.908894	8.026274	-5.150809
6	-6.797519	7.505898	-2.085788
6	-7.247606	3.165459	-3.575100
1	-8.162249	2.678291	-3.233465
6	-3.751327	9.310386	-1.073541
6	-1.646183	6.371001	-8.886337
1	-2.576888	6.056015	-8.391002
6	-3.553269	8.556691	-6.816236
1	-4.438962	7.999741	-7.162939
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1	-2.658603	8.076108	-7.219168
6	1.418962	7.913255	-7.235608
1	2.326572	8.432962	-7.546289
6	-0.202264	6.763929	-3.964827
1	-1.250882	7.031322	-3.771302
6	-2.524212	10.034016	1.089884
1	-1.622810	9.450959	0.839499
1	-2.204768	10.909123	1.680255
1	-3.167081	9.410222	1.731831
6	-7.287780	7.576019	-3.533064
1	-6.706321	6.899610	-4.175704
1	-8.347777	7.280432	-3.583389
1	-7.198600	8.595488	-3.927723
6	-2.274924	9.433002	-4.836640
1	-1.340618	8.992963	-5.207278
1	-2.332217	10.462594	-5.223927
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1	-2.837125	1.737413	-3.630091
1	-2.122568	1.924004	-2.012376
1	-3.775884	1.289393	-2.188413
6	-4.742358	9.460131	-4.860278
1	-4.786821	9.584024	-3.765563

1	-4.682333	10.462685	-5.311348
1	-5.662980	8.978948	-5.217829
6	-4.518354	11.261763	0.213833
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1	-5.051889	11.608518	-0.682896
6	-2.351746	11.343832	-1.033470
1	-2.875526	11.677075	-1.941064
1	-2.018908	12.227098	-0.463968
1	-1.457585	10.779036	-1.344396
6	-7.557296	5.927691	-6.818247
1	-8.090420	6.380869	-5.971244
1	-7.494434	6.676650	-7.620422
1	-8.160837	5.089118	-7.198776
6	-7.302194	6.199531	-1.439543
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1	-8.403569	6.194037	-1.434961
1	-6.950015	5.329360	-2.010044
6	-3.819423	3.821108	-1.009753
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1	-4.207101	4.844878	-0.911129
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1	0.538067	8.715996	-3.312228
1	0.334546	7.516230	-2.018163
1	1.719171	7.387374	-3.123592
6	-1.088911	5.176308	-9.670902
1	-0.857472	4.319887	-9.023867
1	-1.814692	4.842338	-10.426919
1	-0.162157	5.459182	-10.193154
6	-5.487287	4.807587	-7.649269
1	-6.011697	3.874541	-7.907449
1	-5.546206	5.479835	-8.518933
1	-4.428860	4.568322	-7.483446
6	-7.345895	8.709081	-1.300033
1	-6.901518	9.645521	-1.667176
1	-8.438942	8.751593	-1.422658
1	-7.124675	8.624832	-0.225615
6	-0.016263	5.292541	-3.573926
1	1.027212	4.979826	-3.735164
1	-0.251687	5.165761	-2.506014
1	-0.665177	4.614877	-4.146023
6	-1.997439	7.499934	-9.862704
1	-1.130931	7.775755	-10.482034
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1	-2.343512	8.401738	-9.340773

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6	-3.399266	7.152961	-4.514749
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6	-3.017433	3.757895	-5.792809
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6	0.151237	6.753373	-5.298516
6	0.723040	7.339597	-7.992798
1	0.955888	7.562958	-9.035741
6	-6.143855	4.895467	-5.128513
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6	-7.363429	4.398161	-4.659459
1	-8.292869	4.752548	-5.104513
6	-3.031534	5.962179	-5.179543
6	-4.215101	10.493202	-0.848599
6	-6.089806	5.895778	-6.274112
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6	-6.243996	2.993127	-3.054681
1	-6.291882	2.262704	-2.244483
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1	-2.393087	6.036320	-8.370289
6	-3.223965	8.468615	-6.709372
1	-3.937302	7.739965	-7.128614
1	-3.463449	9.455703	-7.135521
1	-2.217171	8.210415	-7.047403
6	1.621854	7.694193	-6.996140
1	2.555663	8.196209	-7.253502

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6	-2.826330	11.142787	-0.743302
1	-2.281150	11.081443	-1.696079
1	-2.930211	12.203793	-0.469697
1	-2.218123	10.647374	0.029261
6	-6.957638	7.892643	-3.067873
1	-6.407525	7.345614	-3.848270
1	-8.012076	7.573731	-3.099797
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6	-2.141621	9.408258	-4.674868
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6	-4.613503	9.294012	-4.866525
1	-4.804393	9.314509	-3.788583
1	-4.552036	10.333770	-5.228321
1	-5.471908	8.810721	-5.357523
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1	-4.332374	10.243690	1.311827
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6	-4.993490	11.210863	-1.958443
1	-5.961897	10.728633	-2.157969
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1	-4.419978	11.221265	-2.894872
6	-7.423444	6.590251	-6.545635
1	-7.848144	7.034311	-5.634265
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1	-8.164518	5.895119	-6.970128
6	-6.607339	6.092746	-1.406059
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1	-6.060264	5.469191	-2.125780
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6	-7.129346	8.394083	-0.633564
1	-7.119331	9.468042	-0.861669
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1	-2.071623	8.415229	-9.187465

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15	-2.427500	7.474262	0.207891
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6	-3.385140	8.562992	-5.315172
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1	-1.203168	3.919247	-7.005260
6	-3.467991	7.193265	-4.595290
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6	-3.721654	3.147709	-2.686207
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1	-8.321759	4.714110	-5.075614

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6	-6.228228	3.073606	-2.971715
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1	-2.280245	10.451348	0.354071
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1	-5.541493	8.881643	-5.508644
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1	-5.602120	5.896300	-8.419312
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6	-3.361059	7.176987	-4.474672
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