

-- SUPPORTING INFORMATION --

For

Application of planar superatom model on $[\text{Hg}_5(\text{C}(\text{CF}_3)_2)]$. Bonding and magnetic response considerations into a five-fold d^{10} - d^{10} metal cycle.

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Character Table for the D_{5h} point group.

D_{5h}			E	E	$2C_5$	$2C_5$	$2C_5^2$	$2C_5^2$	$\{5C_2'/5C_2''\}$	$\{\sigma_h/\sigma_h\}$	$2S_5$	$2S_5$	$2S_5^3$	$2S_5^3$	$\{5\sigma_v/5\sigma_v\}$
a_1'	a_1'	Γ_1	1	1	1	1	1	1	1	1	1	1	1	1	1
a_2'	a_2'	Γ_2	1	1	1	1	1	1	-1	1	1	1	1	1	-1
e_1'	e_1'	Γ_3	2	2	$2\cos 72^\circ$	$2\cos 72^\circ$	$2\cos 144^\circ$	$2\cos 144^\circ$	0	0	$2\cos 72^\circ$	$2\cos 72^\circ$	$2\cos 144^\circ$	$2\cos 144^\circ$	0
e_2'	e_2'	Γ_4	2	2	$2\cos 144^\circ$	$2\cos 144^\circ$	$2\cos 72^\circ$	$2\cos 72^\circ$	0	0	$2\cos 144^\circ$	$2\cos 144^\circ$	$2\cos 72^\circ$	$2\cos 72^\circ$	0
a_1''	a_1''	Γ_5	1	1	1	1	1	1	1	-1	1	1	1	1	-1
a_2''	a_2''	Γ_6	1	1	1	1	1	1	-1	-1	1	1	1	1	1
e_1''	e_1''	Γ_7	2	2	$2\cos 72^\circ$	$2\cos 72^\circ$	$2\cos 144^\circ$	$2\cos 144^\circ$	0	0	$2\cos 72^\circ$	$2\cos 72^\circ$	$2\cos 144^\circ$	$2\cos 144^\circ$	0
e_2''	e_2''	Γ_8	2	2	$2\cos 144^\circ$	$2\cos 144^\circ$	$2\cos 72^\circ$	$2\cos 72^\circ$	0	0	$2\cos 144^\circ$	$2\cos 144^\circ$	$2\cos 72^\circ$	$2\cos 72^\circ$	0
$\gamma_{1/2}$	$e_{1/2}'$	Γ_9	2	-2	$2\cos 36^\circ$	$2\cos 144^\circ$	$2\cos 72^\circ$	$2\cos 108^\circ$	0	0	$2\cos 126^\circ$	$2\cos 54^\circ$	$2\cos 162^\circ$	$2\cos 18^\circ$	0
$\gamma_{3/2}$	$e_{3/2}'$	Γ_{10}	2	-2	$2\cos 108^\circ$	$2\cos 72^\circ$	$2\cos 144^\circ$	$2\cos 36^\circ$	0	0	$2\cos 18^\circ$	$2\cos 162^\circ$	$2\cos 126^\circ$	$2\cos 54^\circ$	0
$\gamma_{5/2}$	$e_{5/2}'$	Γ_{11}	2	-2	-2	2	2	-2	0	0	0	0	0	0	0
$\gamma_{7/2}$	$e_{3/2}''$	Γ_{12}	2	-2	$2\cos 108^\circ$	$2\cos 72^\circ$	$2\cos 144^\circ$	$2\cos 36^\circ$	0	0	$2\cos 162^\circ$	$2\cos 18^\circ$	$2\cos 54^\circ$	$2\cos 126^\circ$	0
$\gamma_{9/2}$	$e_{1/2}''$	Γ_{13}	2	-2	$2\cos 36^\circ$	$2\cos 144^\circ$	$2\cos 72^\circ$	$2\cos 108^\circ$	0	0	$2\cos 54^\circ$	$2\cos 126^\circ$	$2\cos 18^\circ$	$2\cos 162^\circ$	0

Multiplication Table for the D_{5h} point group.

D_{5h}^*	$\gamma_{1/2}$	$\gamma_{3/2}$	$\gamma_{5/2}$	$\gamma_{7/2}$	$\gamma_{9/2}$	$\otimes$
	$\gamma_{1/2}$	$\gamma_{3/2}$	$\gamma_{5/2}$	$\gamma_{7/2}$	$\gamma_{9/2}$	a_1'
	$\gamma_{1/2}$	$\gamma_{3/2}$	$\gamma_{5/2}$	$\gamma_{7/2}$	$\gamma_{9/2}$	a_2'
	$\gamma_{7/2} \oplus \gamma_{9/2}$	$\gamma_{5/2} \oplus \gamma_{9/2}$	$\gamma_{3/2} \oplus \gamma_{7/2}$	$\gamma_{1/2} \oplus \gamma_{5/2}$	$\gamma_{1/2} \oplus \gamma_{3/2}$	e_1'
	$\gamma_{3/2} \oplus \gamma_{5/2}$	$\gamma_{1/2} \oplus \gamma_{7/2}$	$\gamma_{1/2} \oplus \gamma_{9/2}$	$\gamma_{3/2} \oplus \gamma_{9/2}$	$\gamma_{5/2} \oplus \gamma_{7/2}$	e_2'
	$\gamma_{9/2}$	$\gamma_{7/2}$	$\gamma_{5/2}$	$\gamma_{3/2}$	$\gamma_{1/2}$	a_1''
	$\gamma_{9/2}$	$\gamma_{7/2}$	$\gamma_{5/2}$	$\gamma_{3/2}$	$\gamma_{1/2}$	a_2''
	$\gamma_{1/2} \oplus \gamma_{3/2}$	$\gamma_{1/2} \oplus \gamma_{5/2}$	$\gamma_{3/2} \oplus \gamma_{7/2}$	$\gamma_{5/2} \oplus \gamma_{9/2}$	$\gamma_{7/2} \oplus \gamma_{9/2}$	e_1''
	$\gamma_{5/2} \oplus \gamma_{7/2}$	$\gamma_{3/2} \oplus \gamma_{9/2}$	$\gamma_{1/2} \oplus \gamma_{9/2}$	$\gamma_{1/2} \oplus \gamma_{7/2}$	$\gamma_{3/2} \oplus \gamma_{5/2}$	e_2''
	$a_1' \oplus a_2' \oplus e_1''$	$e_2' \oplus e_1''$	$e_2' \oplus e_2''$	$e_1' \oplus e_2''$	$a_1'' \oplus a_2'' \oplus e_1'$	$\gamma_{1/2}$
		$a_1' \oplus a_2' \oplus e_2''$	$e_1' \oplus e_1''$	$a_1'' \oplus a_2'' \oplus e_2'$	$e_1' \oplus e_2''$	$\gamma_{3/2}$
			$a_1' \oplus a_2' \oplus a_1' \oplus a_2''$	$e_1' \oplus e_1''$	$e_2' \oplus e_2''$	$\gamma_{5/2}$
				$a_1' \oplus a_2' \oplus e_2''$	$e_2' \oplus e_1''$	$\gamma_{7/2}$
					$a_1' \oplus a_2' \oplus e_1''$	$\gamma_{9/2}$