**Supplementary Information**

Intersecting nodal rings in orthorhombic-type BaLi$_2$Sn compound

Fig. S1. Schematic diagrams of (a) isolated nodal ring; (b) nodal link; (c)-(d) INRs composed of two nodal rings and three nodal rings, respectively.
Fig. S2. Enlarged view of the band structure along the Γ-Z path.
Fig. S3 Band structure of BaLi$_2$Sn calculated with HSE06.
Fig. S4. The calculated band structures along $\Gamma$-M ($M = A, B, C, D, E, F, G, H, I,$ and $Y$) in the $k_y = 0$ plane.
Fig. S5. The calculated band structures along $\Gamma$-$N$ ($N = X, A, B, C, D, E, F, G, H, I,$ and $Z$) in the $k_y = 0$ plane.
Fig. S6. The calculated band structures along \( \Gamma - Q \) (\( Q = \text{A, B, C, D, E, F, G, H, I, and X} \)) in the \( k_z = 0 \) plane.
Fig. S7 (a)-(c). schematic diagrams of possible 1D TE in $k_x = 0$, $k_y = 0$, and $k_z = 0$ planes. The TNR, i.e., the 1D TE, can be observed only in the $k_x = 0$ and $k_y = 0$ planes.
Fig. S8. The calculated band structures of the BaLi$_2$Sn, calculated with the help of the first-principles tight-binding model within Wannier90 code.
Fig. S9. Calculated phonon spectrum (b) along the selected \( \Gamma \)-Z-T-Y-S-X-U-R (a) directions. The phonon dispersion was checked with the CASTEP modulus in MATERIALS STUDIO based on the finite displacement method. A plane-wave cutoff of 400 eV was used for the calculations.
Table S1: The calculated elastic constants ($C_{ij}$) for BaLi$_2$Sn compound.

<table>
<thead>
<tr>
<th>Compound</th>
<th>$C_{11}$ [GPa]</th>
<th>$C_{12}$ [GPa]</th>
<th>$C_{13}$ [GPa]</th>
<th>$C_{22}$ [GPa]</th>
<th>$C_{23}$ [GPa]</th>
<th>$C_{33}$ [GPa]</th>
<th>$C_{44}$ [GPa]</th>
<th>$C_{55}$ [GPa]</th>
<th>$C_{66}$ [GPa]</th>
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<tbody>
<tr>
<td>BaLi$_2$Sn</td>
<td>57.52</td>
<td>12.15</td>
<td>6.78</td>
<td>45.84</td>
<td>22.78</td>
<td>29.50</td>
<td>21.56</td>
<td>16.72</td>
<td>12.11</td>
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