Supporting Information for

Anisotropic optical properties of GeS investigated by optical absorption and photoreflectance

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**Fig. S1.** Electronic band structures calculated with mBJ-TB09 (black) and HSE06 (red). Positions of VBM and CBM are indicated.

**Table S1.** The energies of optical transitions $E_0$, $E_1$ and $E_2$ calculated using mBJ-TB09 potential and HSE06 hybrid functional.

<table>
<thead>
<tr>
<th>Transition</th>
<th>Assignation</th>
<th>Energy (eV)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Experiment</td>
</tr>
<tr>
<td>$E_0$</td>
<td>$\Gamma-Z\rightarrow\Delta$</td>
<td>1.685</td>
</tr>
<tr>
<td>$E_1$</td>
<td>$\Gamma$</td>
<td>1.701</td>
</tr>
<tr>
<td>$E_2$</td>
<td>$\Delta$</td>
<td>1.797</td>
</tr>
</tbody>
</table>
**Fig. S2.** Valence band (a) and conduction band (b) on $\Gamma$-Z-T-Y plane.
Fig. S3. Calculated absorption coefficient on zigzag and armchair directions.

\[
\alpha(\omega) = \omega \sqrt{2 \sqrt{\varepsilon_1^2(\omega) + \varepsilon_2^2(\omega)} - 2 \varepsilon_1(\omega)}
\]

\[
\varepsilon(\omega) = \varepsilon_1(\omega) + i \varepsilon_2(\omega)
\]