

## Supplementary information: Electronic band structure and excitons in LiGaO<sub>2</sub> and LiGa<sub>5</sub>O<sub>8</sub>

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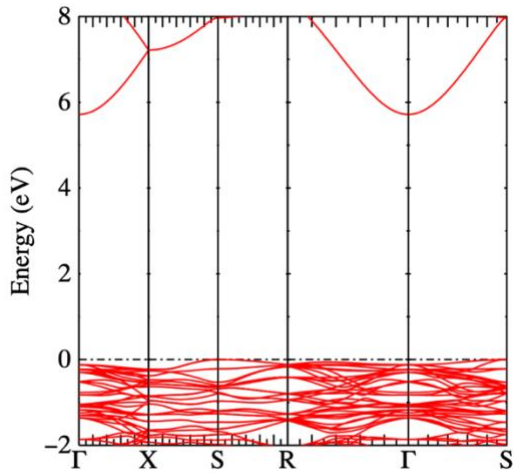


Fig. 1 Band structure of LiGa<sub>5</sub>O<sub>8</sub> in spinel structure calculated in the QSGW $\Gamma$  method.

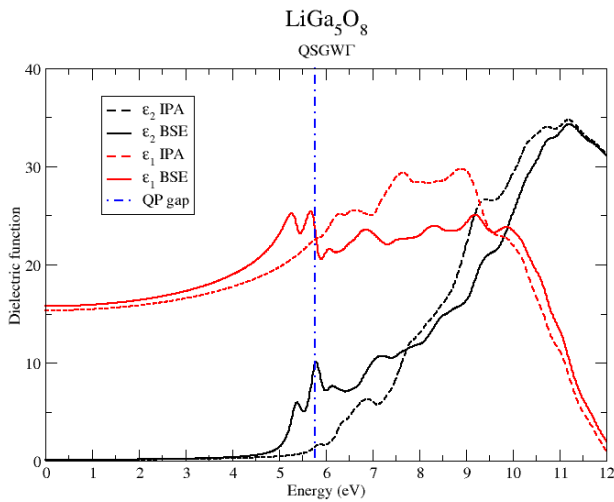


Fig. 2: Real (red) and imaginary (black) part of function of LiGa<sub>5</sub>O<sub>8</sub>, obtained in the Independent Particle Approximation (dashed lines), and the Bethe-Salpeter-Equation approach (solid lines), showing evidence of a strongly bound exciton. The blue dash-dotted line indicates the lowest direct quasiparticle gap.