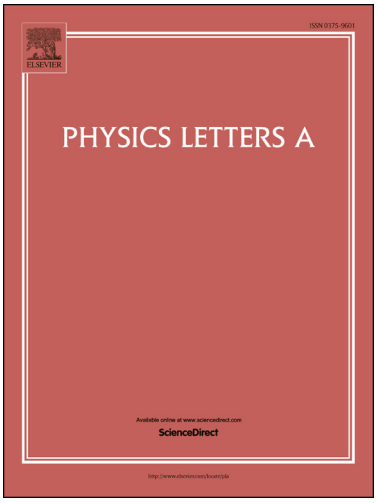
Accepted Manuscript



First-principles many-body comparative study of Bi_2Se_3 crystal: A promising candidate for Broadband Photodetector

Abdullahi Lawal, A. Shaari, R. Ahmed, Norshila Jarkoni

PII: S0375-9601(17)30688-6
DOI: http://dx.doi.org/10.1016/j.physleta.2017.07.023
Reference: PLA 24628

To appear in: *Physics Letters A*

Received date: 16 May 2017
Revised date: 29 June 2017
Accepted date: 17 July 2017

Please cite this article in press as: A. Lawal et al., First-principles many-body comparative study of Bi_2Se_3 crystal: A promising candidate for Broadband Photodetector, *Phys. Lett. A* (2017), http://dx.doi.org/10.1016/j.physleta.2017.07.023

Highlights

- First study of Bi_2Se_3 by Bethe-Salpeter equation (BSE) of many-body perturbation theory (MBPT) method.
- The band gap of 0.36 eV has been obtained from PBE+GW approximation.
- The influences of electron-hole interactions on optical properties are confirmed.
- The exciton energy shows that the title material can absorb a photon within infrared wavelengths.