

PHENOMENOLOGY OF TWO-GAP SUPERCONDUCTOR HYDROGEN-INTERCALATED TITANIUM DISELENIDE EXPLAINED IN THE FRAMEWORK OF ELIASHBERG THEORY

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We have investigated the phenomenology of H-intercalated TiSe₂. Recent experiments have shed light on the symmetry of the wave parameter and the presence of multiple conduction bands [1].

All experimental data in the superconductive state (critical temperature, superconductive gaps upper critical fields etc have been explained in the framework of two-band s-wave Eliasherg theory with phononic mechanism. All data are in perfect agreement with the theory. We have also examined experimental data in normal state and also in this case the agreement with the theory is very good.

Although this material is certainly complicated and there are competent orders (superconductivity and charge density waves) we have shown that it is possible to explain the experimental data within a relatively simple conventional theory.

References

- [1] E. Piatti, G. Gavello, G. A. Ummarino, F. Košuth, P. Szabó, P. Samuely, R. S. Gonnelli, D. Daghero, *Materials Today Physics* **59**, 101883 (2025).