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**Title:** Multiple optical gaps and laser with magnonic pumping in 2D Ising superconductors

**Abstract:**

Ising superconductivity has been recently discovered in 2D transition metal dichalcogenides. We report that such superconductors have unusual optical properties controlled by the in-plane Zeeman field. First, we find several optical gaps visible as peaks of the conductivity and the Raman susceptibility. Moreover, we find that the Ising spin splitting in the spectrum of Bogolubov quasiparticles enables strong population inversion generated by the time-dependent Zeeman field. Ultimately this leads to the possibility of the superconducting laser with magnonic pumping which can be realized in the van der Waals structures consisting of the Ising superconductor and the ferromagnetic insulator layers.

**References:**

1. [arXiv:2111.03623](https://arxiv.org/abs/2111.03623)