# One-Step Model Photoemission Calculations of Type-II Dirac Semimetal PtTe$_2$

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**Abstract.** Among the class of transition metal dichalcogenides (TMDC) PtTe$_2$ with trigonal structure belongs to type-II Dirac semimetals and attracted extensive research interest due to the Dirac points appearing at the band touching points of electron and hole pockets. Here we have studied photoelectrons from the surface and bulk states of PtTe$_2$ using state-of-the-art photoemission theory and experiment. We used theoretical photoemission model to distinguish between surface and bulk Dirac states through determinant criterion using the one-step model of the photoemission within the spin-polarized relativistic Korringa-Kohn-Rostoker (SPR-KKR) Green's function method.