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Classification of topological band theories with magnetic wallpaper group symmetries in 2D MENG HUA, SYED RAZA, University of Virginia, CHING-KAI CHIU, University of Maryland, College Park, JEFFREY C. Y. TEO, University of Virginia — Topological band theories (TBD) of the tenfold Altland-Zirnbauer (AZ) classes with time reversal, particle-hole or chiral symmetries were classified. On the other hand, crystalline symmetries in two dimensions were classified by the wallpaper group (WG), or the magnetic wallpaper group (MWG), for example, in an antiferromagnetic medium. In this work, we classify gapped TBD in the presence of both non-spatial AZ symmetries as well as spatial WG/MWG symmetries. This extends the classification of topological insulators and superconductors to combine non-symmorphic, symmorphic symmetries and time reversal symmetry.

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