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Local correlation effects on pyrochlore iridate thin films in [111] direction QI CHEN, HSIANG-HSUAN HUNG, XIANG HU, GREGORY A. FIETE, Univ of Texas, Austin — We study the local correlation effects on topological phases of matter in pyrochlore oxide thin films of the form $A_2B_2O_7$ oriented along the [111] direction. We examine bilayer and trilayer lattice models, including an on-site Hubbard interaction, by cellular dynamical mean field theory. The local correlation effects on the topological and magnetic phases are explored in both thin film geometries. Our focus is on the stability of the interaction induced Chern Insulator phases found in mean-field (Hartree-Fock) studies. By including dynamical fluctuations and computing the topological invariants from the single-particle Greens function, we corroborate the results of the Hartree-Fock mean field study and point out the differences. We discuss the likelihood of the Chern insulator phase being experimentally realized in transition metal oxide thin films.

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