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Ferromagnetism in N doped ZnO and MgO MICHAEL SHAUGHNESSY, UC Davis, Lawrence Livermore National Laboratory, L.H. YANG, Lawrence Livermore National Laboratory, C.Y. FONG, UC Davis — We investigate single and multiple dopings of N in $ZnO_{1-x}N_x$ and in $MgO_{1-x}N_x$ using a first principles density functional theory supercell method for x$<$ 10%. We find evidence for ferromagnetism and propose a mechanism mediating the interaction. The magnetic coupling between the local moments on the N defects is studied as a function of the distance between N atoms and the role of hole and carrier co-doping is investigated. An RKKY-type interaction is found to mediate coupling, leading to both ferromagnetic and antiferromagnetic couplings for different doping configurations.

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