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Theoretical insight on layered Mn-compounds under pressure MARIA PEZZOLI, Department of Physics and Astronomy, Stony Brook University, Stony Brook, NY 11794,USA, ZHIPING YIN, Serin Physics Laboratory, Rutgers University,Piscataway, NJ 08854, USA., JACK SIMONSON, Department of Physics and Astronomy, Stony Brook University, Stony Brook, NY 11794,USA, MEIGAN ARONSON, Department of Physics and Astronomy, Stony Brook University, Stony Brook, NY 11794,USA and Brookhaven National Laboratory, Upton, NY, 11973, USA., GABRIEL KOTLIAR, Serin Physics Laboratory, Rutgers University,Piscataway, NJ 08854, USA. — Since the unexpected discovery of Fe-based superconductors, the search for new materials with a higher superconducting T_c has been reinvigorated. Mn based compounds in the $ThCr_2Si_2$ structure contain square lattice layers of the transition metal atom, like the cuprates and the iron arsenides, but the strong antiferromagnetic correlations typical of these compounds suggest that superconductivity in the manganites is impossible. However new experiments carried under pressure show that some of these layered Mn-compounds go through an electron delocalization transition . Here we study these compounds from a theoretical point of view. Looking at the magnetic properties and the Fermi surfaces close to the electron delocalization transition, we discuss the possibility of superconductivity for these compounds.

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