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Emergence of New Magnetic Plateaus in Sheets of Magnetic Dimers S. HARAVIFARD, UChicago/Argonne National Lab, D. GRAF, National High Magnetic Field Lab, A. FEIGUIN, Northeastern Univ, C.D. BATISTA, Los Alamos National Lab, J.C. LANG, Argonne National Lab, D.M. SILEVITCH, UChicago, G. SRAJER, Argonne National Lab, H.A. DABKOWSKA, B.D. GAULIN, McMaster Univ, S.W. TOZER, National High Magnetic Field Lab, T.F. ROSENBAUM, UChicago — $SrCu_2(BO_3)_2$ has corner-sharing Cu^{2+} spin 1/2 dimers lying on a square lattice, corresponding to the two-dimensional Shastry-Sutherland model. At low temperatures and fields exceeding 20 T, there is a Bose-Einstein condensation of triplet excitations of the dimers. At higher magnetic fields, plateaus have been observed in the magnetization, which have been interpreted in terms of preferred filling of the singlet ground state with increasing densities of triplet excitations. We apply hydrostatic pressures up to 2.5 GPa to study the movement and suppression of the quantized magnetic plateaus identified at ambient pressure as well as the emergence of new superstructure configurations.

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