Local physics of magnetization plateaux in the Shastry-Sutherland model\textsuperscript{1} LEONID ISAEV, GERARDO ORTIZ, Physics Dept., Indiana University, Bloomington, IN, JORGE DUKELEY, Instituto de Estructura de la Materia - CSIC, Madrid, Spain — We address the physical mechanism responsible for the emergence of magnetization plateaux in the Shastry-Sutherland model. By using a hierarchical mean-field approach we demonstrate that a plateau is stabilized in a certain \textit{spin pattern}, satisfying \textit{local} commensurability conditions derived from our formalism. Our results provide evidence in favor of a robust local physics nature of the plateaux states, and are in agreement with recent NMR experiments on SrCu$_2$(BO$_3$)$_2$.

\textsuperscript{1}Phys. Rev. Lett. 103, 177201 (2009)