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Dynamics of entanglement in two-dimensional spin system QING XU, SABRE KAIS, Purdue University, GEHAD SADIEK, King Saud University and Ain Shams University — We consider the time evolution of entanglement in a finite two dimensional transverse Ising model. The model consists of a set of 7 localized spin-$\frac{1}{2}$ particles in a two dimensional triangular lattice coupled through exchange interaction J in presence of an external time dependent magnetic field $h(t)$. The magnetic field is presented in various function forms. We find that the magnetic field with sudden change does not provide a way to control or tuning the entanglement. While for the smoothly changing field, when its the character frequency is small, entanglement tends to follow the change of external magnetic field; when it gets larger, entanglement gradually loses pace with the field. It is also shown that the mixing of even a few excited states by small thermal fluctuation is devastating to the entanglement of the ground state.

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