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Vacuum solutions of the theory of electroweak interactions

In this talk I will describe the vacuum sector of the Weinberg-Salam (WS) model of electroweak forces. (In the vacuum sector the WS model yields the $U(2)$ -Yang-Mills-Higgs equations.) We show that at large constant magnetic fields the translational symmetry of the equation is broken spontaneously: the solutions, with the lowest energy locally, in the plane orthogonal to the magnetic field, have the symmetry of a lattice. The stability of these solutions is an open problem.