Pattern formation and coarsening in crystalline membranes
DANIEL A. VEGA, ALDO D. PEZZUTTI, Dep. de Física- IFISUR- Universidad Nacional del Sur - CONICET — We study through a Brazovskii-Helfrich Hamiltonian the process of defect formation, annealing and coarsening of two dimensional crystalline membranes. In good agreement with the cosmological model of Kibble and Zurek, proposed to determine the density of topological defects at the onset of a symmetry breaking phase transition, we found that the collision of orientationally uncorrelated domains produces a structure of grains with an average density of topological defects controlled by the temperature of the quench. The strain field of the dislocations and disclinations generated during the phase separation process can induce the buckling of the membrane, slowing down the Lifshitz-Safran mechanism of coarsening observed in flat systems.