1099-78-294 **Pavel M Lushnikov***, MSC01 1115, 1 University of New Mexico, Albuquerque, NM 87131-0001.
Collapse and laser beam combining.

Solution of a nonlinear Schrodinger equation (NLSE) in dimension two results in finite-time singularity (blow up) for a general class of initial conditions if the L2 norm of the initial condition exceed a critical value. Blow up is often accompanied by a dramatic contraction of the spatial extent of solution, which is called by collapse. We consider application of NLSE to the combing of multiple laser beams, generated by a number of fiber lasers, into a single coherent powerful laser beam. That situation is described by the NLSE with the stochastic initial condition such that the total power (square of L2 norm) exceeds the critical value. We analyze the statistics of the background fluctuations of NLSE solution to produce collapse which results in the spontaneous formation of the powerful coherent laser beam. (Received February 10, 2014)