

Focusing dynamics for 2d Bose gases in the instability regime

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We consider the dynamics of a 2d Bose gas with singular attractive interactions in the instability regime, where the corresponding focusing nonlinear Schrödinger equation (NLS) has a blow-up. We show that the evolution of the condensate is effectively described by this NLS for all times before the blow-up. Moreover, we prove the validity of the Bogoliubov approximation for the fluctuation dynamics, resulting in a norm approximation of the many-body dynamics. This is joint work with Charlotte Dietze and Phan Thành Nam.