Mathematics, Statistics, and Computer Science   **@ UIC**

Applied Mathematics Seminar

Dimension reduction for anisotropic Bose-Einstein condensates in the strong interaction regime

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Abstract: We study the problem of dimension reduction for the three dimensional Gross-Pitaevskii equation (GPE) describing a Bose-Einstein condensate confined in a strongly anisotropic harmonic trap. Since the gas is assumed to be in a strong interaction regime, we have to analyze two combined singular limits: a semi-classical limit in the transport direction and the strong partial confinement limit in the transversal direction. We prove that both limits commute together and we provide convergence rates. The by-products of this work are approximated models in reduced dimension for the GPE, with a priori estimates of the approximation errors. This is a joint work with Weizhu Bao and Loic Le Treust.

Monday, October 13 at 4:00 PM in SEO 636