



MAFIA - the seminar you can't refuse

## **Blow-up of two-dimensional attractive Bose-Einstein condensates at the critical rotational speed**

**Dinh-Thi Nguyen**

Uppsala University

June 18, 2024

12:00–13:00

T212

Fakulta jaderná a fyzikálně inženýrská ČVUT  
Trojanova 13, 12000 Praha

**Abstract:** In this talk, we discuss the ground states of a two-dimensional focusing non-linear Schrödinger equation with rotation and harmonic trapping. When the strength of the interaction approaches a critical value from below, the system collapses to a profile obtained from the optimizer of a Gagliardo-Nirenberg interpolation inequality. This was established before in the case of fixed rotation frequency. We extend the result to rotation frequencies approaching, or even equal to, the critical frequency at which the centrifugal force compensates the trap. We prove that the blow-up scenario is to leading order unaffected by such a strong deconfinement mechanism. In particular, the blow-up profile remains independent of the rotation frequency.

This is the joint work with Van Duong Dinh and Nicolas Rougerie.