

# SEMINARIO DI GEOMETRIA E ALGEBRA

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UNIBA - POLIBA

Giovedì 16 Luglio 2026 - Ore 15:00  
Dipartimento di Matematica UniBa, aula IX, primo piano.

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## Geometric microlocal analysis meets discrete geometry

**Abstract.** Melrose's geometric microlocal analysis involves the concept of blowing up submanifolds to resolve non-uniform operator kernel behaviour. This technique has been central to the analysis of singular spaces, but was previously disconnected from discrete geometry. We introduce a new framework that applies Melrose's blowup techniques to scaling limits of discrete surfaces to study the discrete heat kernel as the discretization mesh size goes to zero. This proves a full asymptotics of the determinant on discrete surfaces beyond the example of regular lattices that has been the best possible result so far.



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