

# Applied Analysis Seminar

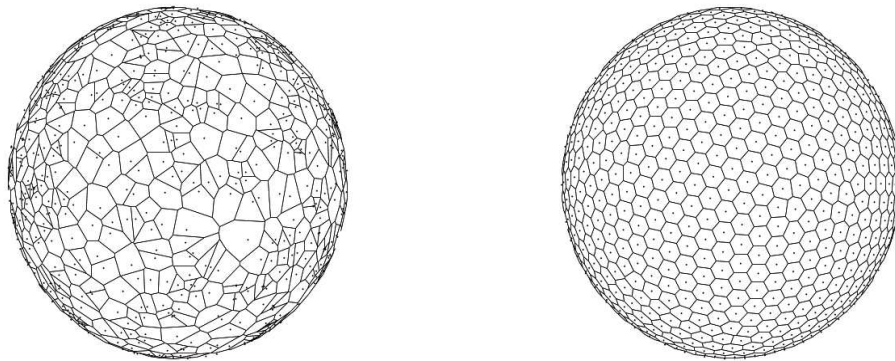
Thursday, May 12th  
14:15, SR 1

Institut für Angewandte Mathematik  
Mathematikon

## Next-order asymptotics and rigidity results for Coulomb and Riesz gases

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Estimation of Fekete points. Bendito, Carmona, Encinas and Gesto, JCPHY, 2007

I will discuss next-order asymptotics as  $n$  goes to infinity, for the minimum energy configurations of  $n$  particles minimizing an inverse-power-law interaction energy. This is a question related to Random Matrix Theory, to Approximation Theory and to Statistical Physics. The first-order term in our large- $n$  asymptotics was known since the 30's. The next-order term, obtained in collaboration with Sylvia Serfaty, is a new functional on micro-scale asymptotic configurations of the points. I will describe some more precise rigidity results (part of joint work with Simona Rota-Nodari) regarding the uniformity of such micro-scale configurations, which is a possible step towards the Abrikosov crystallization conjecture. The related study of energy-minimizing lattices (joint work with Laurent Betermin) and the quantum version of the problem (joint work with Codina Cotar) will also be mentioned.