

## Droplets associated to polynomials.

In the case where the potential is of the form

$$\Phi(z) = |z|^2 + \Re(P(z)),$$

where  $P$  is a polynomial one can explicitly find the Makarov-Hedenmalm droplet associated to the Quantum Hele-Shaw flow. This description involves the notion of harmonic moments. The aim of this internship will be to investigate this notion and to compute some examples using MATLAB.

Contact: Denis Grebenkov and Michel Zinsmeister (Denis.Grebenkov@polytechnique.edu, zins@math.cnrs.fr).

Reference: Elbau, Felder: Density of eigenvalues of random normal matrices, CMP 259 (2005) 433-450. (A reprint can be sent to every interested student).

Location of the internship: Orleans and Ecole Polytechnique.