## Hyperbolic solutions to Bernoulli's free boundary problem

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Bernoulli's free boundary problem is an overdetermined problem in which one seeks an annular domain such that the capacitary potential satisfies an extra boundary condition. There exist two different types of solutions: elliptic and hyperbolic solutions. elliptic solutions are "stable" solutions and tractable by variational method and maximum principle, while hyperbolic solutions are "unstable" solutions of which the qualitative behavior is less known.

I will present a recent joint work with Antoine Henrot in which we show the qualitative behavior of hyperbolic solutions by a new flow approach.