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Title: The cohomological class of the Yoccoz function and of the Brjuno function

When an irrational rotation is analytically perturbed, it is a natural question to ask whether or not there exists a neighborhood of the fixed point where the dynamics looks like the unperturbed case. For the quadratic polynomial, the Yoccoz function measures the size of the neighborhood where the dynamics is a rigid rotation. Its relation with the Brjuno function is established through a geometrical renormalisation argument, which uses both a change of variable, combined with the replacement of the original map with a suitably chosen first return map. If the original map has rotation number x (where 0 <x<1), the replaced map has rotation number 1/x mod 1. The argument gives a twisted cohomological equation fulfilled both by the Yoccoz function and by the Brjuno function, up to a difference which is a continuous function of the rotation number, which is conjectured to be 1/2- Hölder continuous.
Also other versions of the Brjuno functions are known (related to different continued fraction algorithms) and they belong to the same Hölder cohomology class.

(The last part of the talk is based on work in collaboration with S.B. Lee and work in progress with C. Burrin and S.B. Lee)