On a conjecture of Marmi, Moussa, and Yoccoz on the sizes of Siegel disks

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Abstract: Quasi-periodic dynamics in one complex variable reveals fascinating interplays between complex analysis and Diophantine approximations. The question of whether a quasi-periodic dynamics is conjugate to an irrational rotation dates back to more than a century ago, with remarkable contributions by C. Siegel, A. Brjuno, and J.-C. Yoccoz. The maximal domain, on which a conjugacy exists, is called the Siegel disk of the map, and it is known that the size of the Siegel disk is given by an arithmetic function of the rotation, up to an error function. In 1992, Marmi, Moussa, and Yoccoz conjectured that the error function is 1/2-Hölder continuous. In this talk, I will discuss a major advance on this conjecture, using a renormalization operator acting on an infinite dimensional space of maps. This is based on a joint work with Arnaud Cheritat (Toulouse).