

Diophantine Approximation, Fractal Geometry and Related topics /  
Approximation diophantienne, géométrie fractale et sujets connexes

ID de Contribution: 20

Type: Non spécifié

## Stéphane Seuret

*jeudi 6 juin 2024 11:00 (30 minutes)*

An asymmetric version of the Littlewood conjecture

In this talk, we study an asymmetric version of the Littlewood conjecture proposed by Y. Bugeaud. A parameter  $\sigma \in [0,1]$  being fixed, we study the set  $B(\sigma)$  of those pairs of real numbers  $(x,y)$  such that  $\inf_{q \geq 1} (q \cdot \max(\|qx\| \|qy\|)^{1+\sigma} \min(\|qx\| \|qy\|)^{1-\sigma}) > 0$ . Counter-examples to the Littlewood conjecture would belong to  $B(0)$  and appear as an interpolation from the set  $B(1)$  corresponding to the badly approximable vectors in dimension 2. We prove that for every  $\sigma \in [0,1]$ ,  $B(\sigma)$  has Hausdorff dimension 2, and propose some natural conjectures around such sets. Joint work in progress with F. Adiceam.