

1167-51-225

Maxime Fortier Bourque* (maxime.fortier-bourque@glasgow.ac.uk) and **Bram Petri**.

Linear programming bounds for hyperbolic surfaces. Preliminary report.

I will describe ongoing joint work with Bram Petri in which we obtain new upper bounds for the systole, kissing number, and first positive eigenvalue of the Laplacian on hyperbolic surfaces of low genus. The bounds are based on the Selberg trace formula, which we use to translate the problem into the realm of Fourier analysis. The optimization problems thus formulated are then tackled with the aid of computers. The whole strategy is inspired by work of Cohn and Elkies, who obtained upper bounds on the density of sphere packings in Euclidean spaces in a similar way. (Received March 08, 2021)