

BOSTON UNIVERSITY NUMBER THEORY SEMINAR

# Recent improvements in sphere packing density bounds

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Monday, Sep 8 at 4:15 pm  
111 Cummington Street, MCS B21  
Tea and cookies in MCS 144 at 4:00 pm

**Abstract:** In this talk, we'll examine bounds for the sphere packing density in Euclidean space, i.e., the largest fraction of  $\mathbf{R}^n$  that can be covered by congruent, non-overlapping balls. I'll explain how Stephanie Vance and Akshay Venkatesh (separately) used the Siegel mean value theorem to derive improved lower bounds in high dimensions, while Yufei Zhao and I slightly improved the upper bounds. The upper and lower bounds remain depressingly far apart, but the techniques are surprisingly simple and further progress should be possible.