Pretentious characters and the Polya–Vinogradov theorem

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Abstract

The Polya–Vinogradov theorem is one of the central estimates of analytic number theory. There had not been any significant improvement in this theorem since 1919 until the speaker and Soundararajan did so in the last few weeks. Part of the story is to gain a much sharper understanding of large character sums (which only occur if pretentious characters get involved), and part of it involves the definition of a "new" norm on high-dimensional tori. This talk will outline the proof and focus on the potential applications of this norm.

This talk should be accessible to graduate students.