The topology of number rings

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102 Bradley Hall, 4:00 pm
(Tea 3:30 pm Math Lounge)

Abstract

Let R be a number ring, such as the integers. Among several interesting ways of thinking of R topologically, I will focus on algebraic K-theory. Algebraic K-theory begins by studying the finitely-generated projective modules over R, and ends by constructing a space KR whose topology encodes a wealth of number-theoretic information: class groups, unit groups, Brauer groups, Iwasawa theory, etc. When R is the ring of integers, the homotopy groups of KR are closely related to special values of the Riemann zeta function (as conjectured by Lichtenbaum and Quillen).

I plan to explain these ideas at a level suitable for graduate students, and therefore most, if not all, of the terms used above will be defined in the talk. In the last few minutes I will sketch some recent work on Stiefel-Whitney classes for real embeddings of number rings.

This talk should be accessible to graduate students.