Colloquium

UNIVERSITY OF NOTRE DAME
Department of Mathematics

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4:20 PM
117 Hayes-Healy Hall

Title: Codes, arithmetic and manifolds

Abstract:

We define error correcting linear codes and explain why
they do the desired job. All this looks completely harmless, things
one can teach in school. To indicate that codes are very difficult
mathematical objects, we associate to them a lattice in $\mathbb R^n$, which, if
the codes are so called self dual codes, are unimodular. Unimodular
lattices in $\mathbb R^n$ are not understood and there is even no conjectural
picture. Thus the same holds for self dual codes, which are only a
special case of linear codes. In such a situation it might be
interesting to see codes appearing in a completely different context,
namely in topology. This simple relation will be explained and some
basic results obtained in joint work with Volker Puppe are presented.
At the end I will discuss some open problems.