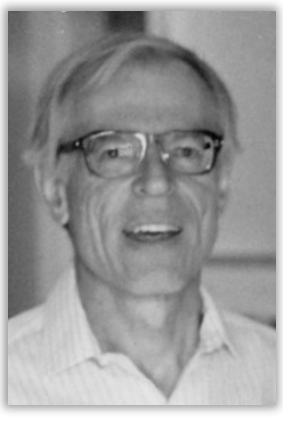
UC RIVERSIDE | UNIVERSITY OF CALIFORNIA | Department of Mathematics

The Department of Mathematics at the University of California, Riverside is proud to present

The Fifth Lecture of the Richard E. Block Distinguished Lecture in Mathematics Series



Given by

M. Susan Montgomery

Professor & Director of Graduate Studies, University of Southern California

Orthogonal representations: from groups to Hopf algebras to tensor categories

Let G be a finite group and V a finite dimensional representation of G over the complex numbers. According to a wonderful theorem of Frobenius and Schur from 1906, there are only three possibilities for V:

1. V has a non-degenerate G-invariant symmetric bilinear form (the orthogonal case)
2. V has a non-degenerate G-invariant skew-symmetric bilinear form (the symplectic case);
3. V does not admit any non-degenerate G-invariant bilinear form.

They give a formula, called the indicator, with possible values 1, -1, or 0, depending on the case. The work of Frobenius and Schur was extended to representations of finite dimensional Hopf algebras, starting about 20 years ago, and then to various tensor categories. It turns out to be very useful in representation theory since it is a category invariant of the category of representations.

We will survey some of these results and their applications.

Wednesday, May 25th, 2022
4:00 p.m.
in Skye 284