ICTS Group Theory and Representation Theory Seminar

Title : Some Applications of Representation Theory to Classical Number Theory

Speaker : B. Sury (ICTS-TIFR, Bengaluru)

Date : Wednesday, 10 September 2025

Time : 11:30 AM (IST)

Abstract : A more correct title would be to include applications to Riemann manifolds as well. The Dedekind zeta function of a number field contains a lot of information about the field and Kronecker had conjectured that it determines the number field up to isomorphism. In 1926, Gassmann constructed counter-examples by rephrasing the problem in terms of representation theory of finite groups. In 1985, this same idea was extended by Sunada to an analogous zeta function defined in terms of eigenvalues of the Laplacian of a compact Riemannian manifold. This allowed him to systematically construct many isospectral manifolds that are not isometric - thereby showing that `one cannot hear the shape of a drum'. In this talk, we discuss the basic representation theoretic property behind these results and describe how one may draw implications such as the ones indicated above

Venue : Madhava Lecture Hall