L^2-invariants via division rings

Speaker: Bin Sun
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Time: Fri, June 27th, 15:30-17:30pm
Venue: Room 102, SCMS

Abstract:

I will present joint work with Dawid Kielak on studying L^2-Betti numbers through the framework of division rings, leading to two main results.

First, we consider fiber bundles $F \to E \to B$ where, under certain conditions—such as F being simply connected—the L^2-Betti numbers of the total space E can be computed from the twisted L^2-Betti numbers of the base B. We establish a relation between twisted and untwisted L^2-Betti numbers when $\pi_1(B)$ is locally indicable. As an application, we compute $b_*^{(2)}(E)$ when B is either a surface or a non-positively curved 3-manifold.

Our second result establishes an inequality between the twisted Alexander norm and the Thurston norm for free-by-cyclic groups.