Introduction to Automorphic Forms

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The topology and geometry of the group $SL(2, \mathbb{R})$, discrete subgroups, relation to Riemann Surfaces

Topics

• general introduction to representation theory

• classification of the unitary representation of $SL(2, \mathbb{R})$

• applications of representation theory to Harmonic analysis on various classical spaces.

• Howe-Moore theorem and its applications for uniform distributions and mixing.

• The space of Lattices and functions on Lattices.

• Modular forms and automorphic forms.

• The theory of automorphic forms. Selberg’s trace formula and applications.

Bibliography


• Lang, $SL(2, \mathbb{R})$, GTM
• Sarnak, Some applications of modular forms, Cambridge Tracts in Mathematics