

DECODING MODULAR FORMS...

IPM introductory seminars on Algebraic Geometry and Number Theory

School of Mathematics

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Location: IPM, Niavaran Building, Lecture Hall 1



ABSTRACT. Modular forms are a fascinating and rich area of mathematics that have connections to many other fields, such as number theory, algebraic geometry, representation theory, and physics. They were first introduced by Carl Friedrich Gauss in the 19th century, who studied the properties of modular functions, which are special functions, defined on the upper-half plane, that are invariant under a group of transformations called modular transformations. Modular forms are generalizations of modular functions that also have a certain growth condition at infinity. One of the main motivations for studying modular forms is that they encode deep arithmetic information about various objects, such as elliptic curves, modular curves, Galois representations, and L-functions. In this seminar, we will give an overview of the history and development of modular forms, and explain some of their basic definitions and examples. We will also discuss some of the main applications and open problems in the field.