

早稲田大学整数論セミナーの予定 (ミニワークショップ)

日時：2025 年 11 月 26 日（水） 13:15～14:15

場所：〒169-8555 東京都新宿区大久保 3-4-1
早稲田大学西早稲田キャンパス
61 号館 4 階 405 室 (61 - 405)
対面と Zoom ミーティングによるハイブリッド開催

講演者：富山 和樹 氏（早稲田大学）

タイトル：Modular equations and the singular values of Hauptmoduln

アブストラクト：Monstrous moonshine connects the representation theory of the Monster finite sporadic group to the distinguished modular functions, called Hauptmoduln. In this framework, the identity element of the Monster group corresponds to the elliptic modular j -function, whose CM values (singular moduli) play crucial roles in number theory. Chen-Yui showed that the CM values of Hauptmodul which appears in monstrous moonshine (but not all) have some arithmetic properties similar to the singular moduli. In this talk, we generalize this result to Hauptmoduln whose Fourier coefficients are cyclotomic integers. A main tool for our proof is the use of generalized modular equations for Hauptmoduln, introduced by Cummins-Gannon in the study of monstrous moonshine. As an application, we show that if a formal q -series satisfies the special combinatorial property called complete replicability, its CM values are algebraic integers, without assuming the modular invariance.