Sophia University
Mathematics Colloquium
Special Talk

When: Friday, May 20, 2016, 16:00-17:00

Where: Room No. 201, Main Bldg., Ichigaya-Campus (scheduled)

Speaker: Devika Sharma (Indian Statistical Institute, Delhi)

Title: Modular Galois representations

Abstract: Let p be a prime and let f be a modular form. Let ρ_f be the two dimensional p-adic Galois representation attached to f. We are interested in the (local) behaviour of ρ_f when f is a p-ordinary form of weight at least 2. A result of Mazur-Wiles says that when f is p-ordinary, ρ_f restricted to the decomposition group G_p at p is reducible. Greenberg asked the natural question; when does $\rho_f|_{G_p}$ split?

It is not too hard to see that $\rho_f|_{G_p}$ splits if f has complex multiplication (CM). In this talk, we will discuss the converse, i.e., if the restriction of ρ_f to G_p splits, is f CM? We use deformation theory of Galois representations and the theory of p-adic families of modular forms (Hida families) to generate various non-trivial examples in support of the converse. I will describe these ideas in sufficient detail.

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