New constructions of Hida families

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Abstract

Ramanujan discovered the remarkable congruences modulo 691 between the values of the arithmetic functions $\tau(n)$ and $\sigma^{11}(n)$, for all n. These congruences can be explained using the theory of modular forms. Hida found a way to study congruences of modular forms modulo a prime p using the geometry of the modular curve (and its p-ordinary locus). In this talk I will explain how Hida theory can be generalised to new setting, such as PEL Shimura varieties without ordinary locus and function fields. These are joint works with R. Brasca and M.-H. Nicole.