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Recent progress on the arithmetic of noncongruence modular forms

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After more than one century's effort, the arithmetic of congruence modular forms is well-understood. Contrary to this, the understanding for the arithmetic of noncongruence forms is quite primitive. A main obstacle is the lack of efficient Hecke operators. However, Atkin and Swinnerton–Dyer have come up with a conjecture which is meant to play the role of Hecke operators. Further, Scholl has attached to the space of noncongruence forms a compatible family of l -adic Galois representations. In this talk we'll survey recent progress on the arithmetic of noncongruence forms and modularity of Scholl representations.