

On the Andre-Pink conjecture

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The Andre-Pink conjecture is a special case of the Zilber-Pink conjecture on unlikely intersections. In the case of pure Shimura varieties it asserts that components of the Zariski closure of a subset of a Hecke orbit are weakly special sub varieties. Martin Orr came up with very elegant arguments, using o-minimality (Pila-Zannier ideas involving the Pila-Wilkie theorem) to attack the problem. He solved the problem for all Shimura varieties of abelian type and components of dimension one. Unfortunately, there seem to be serious obstacles to generalising his ideas to higher dimensional components. In a joint work with Rodolphe Richard, we have considered a weaker problem, namely the case of S-Hecke orbits but, using results from ergodic theory rather than o-minimality, derived stronger (then predicted by Andre-Pink) conclusions about the Zariski and even the topological closure of such sets. This work will be the main topic of the talk.