

Stanford Number Theory Seminar

FAKE PROJECTIVE SPACES.

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I will report on some work with Sai-Kee Yeung on arithmetic fake projective spaces. These are quotients of complex ball, by arithmetic subgroups of the group of holomorphic automorphisms of the ball, which have the same Betti numbers as the complex projective space of equal dimension. We use number theoretic results and estimates, the theory of algebraic groups, and the Bruhat-Tits theory of reductive p -adic groups to completely classify fake projective planes, determine other arithmetic fake projective spaces, and arithmetic fake Grassmannians. The first fake projective plane was constructed by David Mumford in 1978 using p -adic uniformization. Our method is direct and allows us to investigate geometric properties of these complex projective smooth surfaces.

12pm Friday October 17, Room 381 U.