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Title: Siegel modular forms and abelian surfaces.

Abstract: The themes of these lectures are :

1. Siegel modular forms of genus 2 : automorphic and geometric perspective. Connection to symplectic Galois representations, statement of the modularity conjecture for abelian surfaces over \mathbb{Q} .

2. P-adic properties of Siegel modular forms : Hida theory over the two dimensional Iwasawa algebra and higher Hida theory over the one dimensional Iwasawa algebra.

3. Application to modularity lifting theorems following the method of Calegari and Geraghty.

Main reference: <http://perso.ens-lyon.fr/vincent.pilloni/complexhidatheorygsp4.pdf>