HUGO CHAPDELAINE, Laval University
Kronecker limit formulas for a class of GL_2-real analytic Eisenstein series

In order to motivate the main result of this talk, we will start by introducing a class of partial zeta functions associated to a totally real field K. The general term of these partial zeta functions are twisted simultaneously by a finite additive character ψ of K and a sign character ω of $K^\times$. Let us denote such a zeta function by $\zeta(s;\omega,\psi)$ where s varies over the complex plane. When ω is chosen to be $\omega_1 := sign(N_{K/\mathbb{Q}})$ and ψ is chosen to be the trivial additive character ψ_0, then the special value at $s=1$, up to some explicit fudge factor, is a rational number which corresponds to the signature defect of a cusp manifold included in a certain Hilbert modular variety associated to K. If one replaces the sign character ω_1 by another sign character ω, then, so far, no differential geometric interpretation has been provided for the special value $\zeta(1;\omega,\psi_0)$. In an attempt to study, from a differential geometric point of view, the value $\zeta(1;\omega,\psi_0)$, we will present a Kronecker limit formula for a class of Eisenstein series $E(z,s;\omega,\psi)$ which "interpolates" the partial zeta functions $\zeta(s;\omega,\psi)$. The interpolation here is in the sense that the constant term of the Fourier series expansion of $z\mapsto E(z,s;\omega,\psi)$ is of the form $\varphi_1(s)\zeta(2s;\omega,\psi)+\varphi_2(s)\zeta(2s-1;\omega,\psi)$ for some explicit functions $\varphi_1(s)$ and $\varphi_2(s)$. Here the parameter z varies over the corresponding Hilbert modular variety.