962-11-1018 **Cormac O'Sullivan*** (cormac@math.umd.edu). *Analytic aspects of Eisenstein series formed with powers of modular symbols.*

Let $\Gamma = \Gamma_0(N)$ be the Hecke congruence group of level N and $\mathfrak{H}$ the upper half plane. Define $S_2(\Gamma)$ to be the space of weight two holomorphic cusp forms on $\Gamma\backslash\mathfrak{H}$ and for γ in Γ and f in $S_2(\Gamma)$ set

$$\langle \gamma, f \rangle = 2\pi i \int_{\gamma z}^{z} f(\tau)\, d\tau.$$

Then we call $\langle \gamma, f \rangle$ a modular symbol. Finally define the series

$$E^{m,n}(z, s; f, g) = \sum_{\gamma \in \Gamma_\infty \backslash \Gamma} \langle \gamma, f \rangle^m \overline{\langle \gamma, g \rangle}^n \mathrm{Im}(\gamma z)^s$$

for z in $\mathfrak{H}$, s in $\mathbb{C}$, $f, g \in S_2(\Gamma)$ and $\Gamma_\infty = \{\gamma \in \Gamma \mid \gamma\infty = \infty\}$. This is a real analytic function of z and an analytic function of s for $\mathrm{Re}(s) > m+n+1$. It has a meromorphic continuation to all $s \in \mathbb{C}$. We'll look at the analytic properties of this series along with some applications, generalizations and open questions. (Received October 01, 2000)