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**Tim Huber\*** ([hubertj@utpa.edu](mailto:hubertj@utpa.edu)), Department of Mathematics, The University of Texas-Pan American, 1201 West University Drive, Edinburg, TX 78539. *Differential Equations for Eisenstein Series on Subgroups of  $SL(2, \mathbb{Z})$ .*

In his 1914 paper "On certain arithmetic functions" Ramanujan showed that Eisenstein series on the full modular group satisfy a coupled system of nonlinear differential equations. His clever proof is based on the Fourier expansions for certain elliptic functions. Ramanujan's work has inspired a number of analogous differential equations for modular forms on subgroups of the modular group, including V. Ramamani's system for modular forms of level 2 and R. Maier's system for modular forms of level 2, 3, and 4. I will discuss further generalizations, corresponding to differential equations for modular forms of level N. Consequences of these differential equations motivated by results in Ramanujan's Lost Notebook will be established. (Received August 25, 2009)