

1067-22-2273

**Oliver Gjoneski\*** (gjoneski@math.duke.edu), Durham, NC 27705. *Multi-Variable Period Polynomials Associated to Cusp Forms for  $SL_2(\mathbb{Z})$* . Preliminary report.

In this paper we explore the notion of multi-variable period polynomials associated to cusp forms for  $SL_2(\mathbb{Z})$ . There are two equally important aspects of this problem, the homological, involving the definition of three-dimensional cells in the symmetric space  $GL_3(\mathbb{R})/O_3(\mathbb{R})A(\mathbb{R})$ , and the cohomological, involving holomorphic Eisenstein series associated to cusp forms on the boundary of this symmetric space. Delving deeper, we hope to present more insight into the Eilenberg-MacLane cohomology of  $GL_3(\mathbb{Z})$ . (Received September 22, 2010)