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**Manish M. Patnaik\*** ([mpatnaik@math.harvard.edu](mailto:mpatnaik@math.harvard.edu)), Department of Mathematics, One Oxford Street, Cambridge, MA 02138. *Hecke Algebras for  $p$ -adic Loop Groups*. Preliminary report.

We describe a construction which allows one to make sense of convolution algebras of double cosets on  $p$ -adic loop groups. Using this construction, we can construct analogues of spherical and Iwahori Hecke algebras for these groups. In the spherical case, one obtains, by means of a Satake isomorphism, a polynomial algebra of theta functions considered previously by Looijenga. In the Iwahori case, one obtains a variant of Cherednik's double affine Hecke algebras. We will also explain how to obtain an explicit formula for spherical functions in this context and sketch some applications of this work. This is joint with Alexander Braverman and David Kazhdan. (Received March 21, 2010)