1067-43-1133 **Fulton B Gonzalez*** (fulton.gonzalez@tufts.edu), Department of Mathematics, Tufts University, Medford, MA 02155. *Conical Distributions on the Space of Flat Horocycles.*

Let $G_0 = K \ltimes \mathfrak{p}$ be the Cartan motion group associated with a noncompact semisimple Riemannian symmetric pair (G, K). Let $\mathfrak{a}$ be a maximal abelian subspace of $\mathfrak{p}$ and let $\mathfrak{p} = \mathfrak{a} + \mathfrak{q}$ be the corresponding orthogonal decomposition. A flat horocycle in $\mathfrak{p}$ is a G_0-translate of $\mathfrak{q}$. A conical distribution on the space Ξ_0 of flat horocycles is an eigendistribution of the algebra $\mathbb{D}(\Xi_0)$ of G_0-invariant differential operators on Ξ_0 which is invariant under the left action of the isotropy subgroup of G_0 fixing $\mathfrak{q}$. In this talk, we show that the space of conical distributions belonging to each generic eigenspace of $\mathbb{D}(\Xi_0)$ is one-dimensional, and we classify the set of all conical distributions on Ξ_0 when G/K has rank one. We also consider relations with the flat horocycle Radon transform and the question of the irreducibility of the natural representation of G_0 on the eigenspaces of $\mathbb{D}(\Xi_0)$. (Received September 19, 2010)