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**Sigurdur Helgason\*** ([helgason@mit.edu](mailto:helgason@mit.edu)), Department of Mathematics, MIT 2-182, Cambridge, MA 02139. *The Horocycle Radon Transform. Some old and new results.*

In this lecture we discuss the horocycle transform on a noncompact symmetric space  $X$  with emphasis on this transform and its connection with the Fourier transform, both on the Schwartz space on  $X$ , where some of the basis results are due to Eguchi. Some new refinements of the support theorems will be featured with geometric interpretation in the rank one case. (Received January 23, 2008)