1071-33-18 **Gopala Krishna Srinivasan*** (gopal@math.iitb.ac.in), Department of Mathematics, Indian Institute of Technology Bombay, Powai, Mumbai, 400019, India. *A new approach to the integrals of Barnes, Mellin and Hecke.*

In this paper we provide a unified approach to a family of integrals of the Barnes - Mellin type involving products of gamma functions along vertical lines in the plane, using the theory of Fourier integral operators. Interesting features arise in many of the cases which call for the application of pull-backs of distributions via smooth submersive maps defined by Hörmander. We derive by this method the integrals of Hecke and Sonine relating to various types of Bessel's functions which have found applications in analytic and algebraic number theory. (Received January 30, 2011)