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Estimates for Fourier Transform of Measures Supported on Singular Hypersurfaces

Isroil A. IKROMOV

Department of Mathematics,  
Samarkand State University,  
University Boulevard 15, 703004,  
Samarkand-UZBAKISTAN  
e-mail: ikromov1@rambler.ru

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 [Authors](#)



[math@tubitak.gov.tr](mailto:math@tubitak.gov.tr)

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**Abstract:** We consider hypersurfaces  $S \subset \mathbb{R}^3$  with zero Gaussian curvature at every ordinary point with surface measure  $dS$  and define the surface measure  $d\mu = \psi(x)dS(x)$  for smooth function  $\psi$  with compact support. We obtain uniform estimates for the Fourier transform of measures concentrated on such hypersurfaces. We show that due to the damping effect of the surface measure the Fourier transform decays faster than  $O(|\xi|^{-1/h})$ , where  $h$  is the height of the phase function. In particular, Fourier transform of measures supported on the exceptional surfaces decays in the order  $O(|\xi|^{-1/2})$  (as  $|\xi| \rightarrow +\infty$ ).

**Key Words:** Oscillatory Integrals, oscillation index, singular hypersurfaces, curvature

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