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Complex integral geometry on real semisimple Lie groups

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Abstract. The integral geometry unifies two principal areas of Sofus Lie: Lie groups and manifolds of geometrical objects. I will talk about a solution of Gelfand's problem: a construction of horospherical transform which gives a possibility to develop the harmonic analysis for real semisimple Lie groups. It is remarkable, that in the center of the construction lies some complex geometry which is responsible for the real picture. Such phenomenas were favorite ones in the time of Pluecker-Lie.