1042-52-106 **Paul R Goodey*** (`pgoodey@ou.edu`), Department of Mathematics, University of Oklahoma, Norman, OK 73019, and **Vlad Yaskin** and **Maryna Yaskina**. *A Fourier transform approach to Christoffel's problem.* Preliminary report.

Christoffel's problem asks for the characteristic properties of those measures on the unit sphere which are first surface area measures of convex bodies. After Christoffel's own early work, the first solutions of the problem, in this form, came in the period 1967–1969 and were due to Berg and Firey. In the meantime there have been many different approaches, especially in the smooth case, since then it amounts to finding conditions under which the solution of a certain elliptic equation is the support function of a convex body. In this talk, we use Fourier transform techniques to present a new perspective on Berg's solution of the Christoffel's problem. We will also provide a regularity result based on our solution. (Received August 13, 2008)