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Sinai Robins* (srobins@temple.edu), Sinai Robins, Temple University, Math Department, 1805 Broad Street, Wachman Hall, Philadelphia, PA 19122. *Polyhedral theta functions*. Preliminary report.

We develop a theory of polyhedral theta functions, with functional equations. Some (but not all) of these theta functions, defined over polyhedral cones, are in fact modular forms, invariant under on a subgroup of the modular group. Upon taking limits of these polyhedral theta functions, we obtain certain relations for solid angles of polytopes. (Received September 04, 2006)