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**Evan Randles\*** (erandles@colby.edu) and **Huan Bui**. *A generalized polar-coordinate integration formula with applications to local (central) limit theorems and operator semigroups.*

The classical polar-coordinate integration formula is an essential tool in harmonic analysis and, especially, the analysis of radial functions in  $\mathbb{R}^d$ . In this talk, we discuss a generalization of the polar-coordinate integration formula where integration with respect to spherical measure  $d\theta$  over the unit sphere  $\mathbb{S}^{d-1}$  is replaced by integration with respect to a certain surface-carried measure  $d\sigma$  over a compact (non-smooth and non-convex) hypersurface  $S$  and where the isotropic dilation  $x \mapsto r \cdot x$  is replaced by a generally anisotropic dilation  $x \mapsto T_r x$ . Using oscillatory integral techniques, we will then discuss applications of this work to local (central) limit theorems and operator semigroups. (Received September 14, 2020)