1123-42-40 **Lesley A. Ward*** (lesley.ward@unisa.edu.au), School of Info Tech & Math Sci, University of South Australia, Mawson Lakes, SA 5095, Australia. *Product Hardy spaces associated to operators with heat kernel bounds on spaces of homogeneous type.*

Much effort has been devoted to generalizing the Calderón–Zygmund theory from Euclidean spaces to metric measure spaces, or spaces of homogeneous type. Here the underlying space $\mathbb{R}^n$ with Euclidean metric and Lebesgue measure is replaced by a set X with general metric or quasi-metric and a doubling measure. Further, one can replace the Laplacian operator that underpins the Calderón–Zygmund theory by more general operators L satisfying heat kernel estimates.

I will present recent joint work with P. Chen, X.T. Duong, J. Li and L.X. Yan along these lines. We develop the theory of product Hardy spaces $H^p_{L_1,L_2}(X_1 \times X_2)$, for $1 \leq p < \infty$, defined on products of spaces of homogeneous type, and associated to operators L_1, L_2 satisfying Davis–Gaffney estimates. This theory includes definitions of Hardy spaces via appropriate square functions, an atomic Hardy space, a Calderón–Zygmund decomposition, interpolation theorems, and the boundedness of a class of Marcinkiewicz-type spectral multiplier operators. (Received August 07, 2016)