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Raul E Curto* (rcurto@math.uiowa.edu), Department of Mathematics, The University of Iowa, Iowa City, IA 52242. *Operators Cauchy dual to 2-hyperexpansive operators: The multivariable case*. Preliminary report.

In joint work with Sameer Chavan, we introduce an abstract framework to study generating m -tuples, and use it to analyze hypercontractivity and hyperexpansivity in several variables. These two notions encompass (joint) hyponormality and subnormality, as well as the study of toral and spherical isometries; for instance, the Drury-Arveson 2-shift is a spherical complete hyperexpansion.

Our approach produces a unified theory that simultaneously covers toral and spherical hypercontractions (and hyperexpansions). As a byproduct, we arrive at a dilation theory for completely hypercontractive and completely hyperexpansive generating tuples. We can then analyze in detail the Cauchy duals of toral and spherical 2-hyperexpansive tuples. We also discuss various applications. (Received September 10, 2010)