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**Betseygail Rand\*** ([bgrand@math.utexas.edu](mailto:bgrand@math.utexas.edu)), University of Texas at Austin, Department of Mathematics, 1 University Station, C1200, Austin, TX 78712-0257. *Pattern Equivariant Cohomology of Tiling Spaces, With Rotations.*

Pattern Equivariant cohomology is a cohomology theory for tiling spaces, developed by Putnam and Kellendonk. It naturally incorporates the Cantor structure of a tiling space into the theory, and yet has been shown to be equivalent to the Čech cohomology of the tiling space. However, as it does not “see” rotations, it misses the rotational geometry of tiling spaces whose patches appear in finitely many orientations, and excludes altogether those tilings like the Pinwheel tiling, whose patches occur in infinitely many orientations. We will define a modified Pattern Equivariant theory that has been developed to accommodate rotations, and discuss some properties of the geometry that naturally arise. (Received September 28, 2005)