Discretization of generalized Chebyshev polynomials of (anti)symmetric multivariate sine functions

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Abstract: The multivariate antisymmetric and symmetric trigonometric functions allow to generalize the classical Chebyshev polynomials to multivariate settings. The four classes of the multivariate polynomials, related to the symmetrized sine functions, are studied. For each of these polynomials, the weighted continuous and discrete orthogonality relations are shown. The related cubature formulas for numerical integration together with further model examples and properties of selected special cases are discussed.