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The S_3-symmetric tridiagonal algebra

The tridiagonal algebra is defined by two generators and two relations called the tridiagonal relations. Special cases of the tridiagonal algebra include the q-Onsager algebra, the Onsager algebra, and the positive part of the quantum affine $\mathfrak{sl}_2$ algebra. In this talk, we introduce the S_3-symmetric tridiagonal algebra. This algebra has six generators. Any two generators commute or satisfy a pair of tridiagonal relations. The generators can be identified with the vertices of a hexagon, such that nonadjacent generators commute and adjacent generators satisfy a pair of tridiagonal relations. We show that any Q-polynomial distance-regular graph gives a finite-dimensional module for the S_3-symmetric tridiagonal algebra.