

# A discrete higher rank Racah algebra

Wouter van de Vijver \*

[wouter.vandevijver@ugent.be](mailto:wouter.vandevijver@ugent.be)

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The Racah algebra is an algebra encoding interesting properties of the univariate Racah polynomials. Recently it has been shown that this algebra can be generalized to the higher rank Racah algebra by considering the tensor product of  $n$  copies of  $\mathfrak{su}(1, 1)$ . It also arises as the symmetry algebra of the  $\mathbb{Z}_2^n$  Dunkl-Laplacian. Remarkably, the connection coefficients between bases of Dunkl-harmonics diagonalized by labelling Abelian subalgebras are multivariate Racah polynomials as defined by M. V. Tratnik. One wonders if an action of the generalized Racah algebra can be realized on the multivariate Racah polynomials encoding their properties. We propose such a realization by making use of the bispectral shift operators defined by J.S. Geronimo and P. Iliev.

*This is joint work with Hendrik De Bie, Vincent X. Genest and Luc Vinet.*

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\*Department of Mathematical Analysis, Universiteit Gent, Sint-Pietersnieuwstraat 33, Ghent, Oost-Vlaanderen 9000, BELGIUM