**HADEWIJCH DE CLERCQ**, Ghent University
*The higher rank Askey-Wilson algebra and the q-Dirac-Dunkl model*

The Askey-Wilson algebra is the $q$-deformed algebra that underlies the Askey-Wilson polynomials. It is strongly connected with the graded quantum superalgebra $\mathfrak{osp}_q(1|2)$: it arises as its covariance algebra and can be embedded in its threefold tensor product. In this talk I will exploit this connection to generalize the Askey-Wilson algebra to higher rank. This will be done in a slightly different presentation, called the $q$-Bannai-Ito algebra. I will propose a general extension procedure in the tensor product of $n$ copies of $\mathfrak{osp}_q(1|2)$. The resulting higher rank algebra will have more generators and $q$-commutation relations and contains the original rank one algebra as its subalgebra. I will present an integrable model as a realization of this algebra, which we will call the $\mathbb{Z}_2^n$ $q$-Dirac-Dunkl model. We will study the central operator in this model through modules of its null-solutions.

This talk is based on joint work with Hendrik De Bie and Wouter van de Vijver.