

**THE HEUN-ASKEY-WILSON ALGEBRA, OPERATOR,  
AND THE ALGEBRAIC BETHE ANSATZ**

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ABSTRACT

In this talk, I will first review the Askey-Wilson (AW) algebra and the closely related Heun-Askey-Wilson (HAW) algebra, and how they arise in the context of quantum integrable systems. For irreducible finite dimensional representations of the AW algebra, I will explain how the spectral problem for the corresponding Heun-Askey-Wilson operator can be handled using the known connection between the AW algebra and the reflection algebra, and implementing a modified version of the algebraic Bethe ansatz. Perspectives for the  $q$ -Onsager algebra will be presented.

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