

APPROACHING ASEPS BY THE ASKEY-WILSON PROCESS REPRESENTATION

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Quadratic harnesses are processes with linear conditional expectations and quadratic conditional variances where conditioning is with respect to the past-future filtration of the process. Typically and unexpectedly these two conditions determine uniquely the process. A large subfamily of quadratic harnesses are Askey-Wilson (AW) processes - Markov processes with Askey-Wilson martingale orthogonal polynomials. We will show how these processes can be related to ASEPs (asymmetric simple exclusion processes). We will use the representation of generating function of the ASEP in terms of moments of AW processes to analyze different properties of ASEPs. This is a joint work with Wlodek Bryc (Univ. of Cincinnati).