# FREDHOLM DETERMINANT REPRESENTATION IN THE MULTIPARTICLE HOPPING ASYMMETRIC DIFFUSION MODEL

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In this talk we provide some exact results on the multiparticle hopping asymmetric diffusion model(MADM) in the KPZ universality class introduced by Sasamoto and Wadati in 1998. First, the transition probability and the current distribution of the N-particle system with arbitrary initial configuration are found by the coordinate Bethe ansatz. For a certain special initial configuration the current distribution is represented by a Fredholm determinant in the limit that N goes to infinity. Finally, we discuss that how the GUE Tracy-Widom distribution emerges from this Fredholm determinant representation. This result can be considered as a partial extension of Borodin and Ferrari's result (2008) on the one-sided PushASEP because it is confirmed that the MADM is mapped to the two-sided PushASEP by their transition probabilities.