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## Second Class Particles Can Perform Random Walks (in Some Cases)

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Two interacting systems of one conserved quantity are known to possess special product shock-measures : the asymmetric simple exclusion process (ASEP) and the totally asymmetric exponential bricklayers process (EBLP). In both models, existing results are :

(1) with the appropriate choice of parameters, the second class particle sees a product shock-measure stationary (Derrida, Lebowitz and Speer for ASEP, B. for EBLP),

(2) such product shock-measures perform ordinary nearest neighbor random walks (sounds strange enough, does it ? Belitsky and Schutz for ASEP, B. for EBLP).

Of course the natural question arises : is it the second class particle that performs the nearest neighbor random walks ? As this sounds even more strange, decoding this question was the challenging part of the following result : yes, the second class particle, annealed w.r.t. the shock distribution, does perform a nearest neighbor random walk in the above cases. I will explain the result, and show how it includes both (1) and (2) above. The relatively easy proof might also open up the path for proving / disproving similar results in other models.

*This is joint work with Gyorgy Farkas, Peter Kovacs, Attila Rakos.*