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Invariance of polymer partition functions under the geometric RSK correspondence. (English) [Zbl 1487.60179]

Inahama, Yuzuru (ed.) et al., Stochastic analysis, random fields and integrable probability – Fukuoka 2019. Proceedings of the 12th Mathematical Society of Japan, Seasonal Institute (MSJ-SI), Kyushu University, Japan, 31 July – 9 August 2019. Tokyo: Mathematical Society of Japan. Adv. Stud. Pure Math. 87, 89–137 (2021).

Summary: We prove that the values of discrete directed polymer partition functions involving multiple non-intersecting paths remain invariant under replacing the background weights by their images under the geometric RSK correspondence. This result is inspired by a recent and remarkable identity proved by D. Dauvergne et al. [“The directed landscape”, Preprint, arXiv:1812.00309] which is recovered as the zero-temperature, semi-discrete limit of our main result.

For the entire collection see [Zbl 1482.60003].

MSC:

60K35 Interacting random processes; statistical mechanics type models; percolation theory

82D60 Statistical mechanics of polymers

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directed polymers; Kardar-Parisi-Zhang; RSK correspondence

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