



# Hamilton Institute

**On the free energy of a Brownian directed polymer**

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*Abstract*

Directed polymers in random environments have been studied by authors including Derrida (1990), Buffet and Pule (1997), Carmona and Hu (2002), and Comets and Yoshida (2005). O'Connell and Yor (2001) have given a model for a Brownian directed polymer in  $1+1$  dimensions, and conjectured a formula for its free energy density. We prove the conjecture, and as a corollary give a new proof that  $L_n(n)/n$  converges to 2 almost surely, where  $L_n$  is the last passage time in a Brownian directed percolation problem, or equivalently the law of the largest eigenvalue of a GUE random square matrix of side  $n$ .

**Venue:** Seminar Room, Hamilton Institute, Rye Hall,  
NUI Maynooth

**Time:** 1.00 - 2.00pm (followed by tea/coffee)

Travel directions are available at [www.hamilton.ie](http://www.hamilton.ie)



**CC Ireland Chapter**