

Multi-scale webs of coalescing random walks  
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Consider coalescing random walks on the one-dimensional integer lattice, started from every point in space and time, whose jump kernel has finite moments up to order  $\alpha$ . Thanks to the work of Belhaouari, Mountford, Newman, Ravishankar, Sun, and Valle, we know that if  $\alpha$  is greater than three, then the collection of all random walk paths converges in law with respect to a rather strong topology to an object called the Brownian web, which informally consists of coalescing Brownian motions, started from every point in space and time. I will report about work in progress with Nic Freeman where we aim to understand what happens in the regime where  $\alpha$  lies between two and three. In this regime, a single random walk path converges to Brownian motion, but the collection of all random walk paths fails to converge to the Brownian web. Our main tool is a new multi-scale decomposition of discrete webs.