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David Jerison, Lionel Levine* (levine@math.mit.edu) and **Scott Sheffield**. *Logarithmic fluctuations from circularity*.

Start with n particles at the origin in the square grid \mathbb{Z}^2 , and let each particle in turn perform simple random walk until reaching an unoccupied site. Lawler, Bramson and Griffeath proved that with high probability the resulting random set of n occupied sites is close to a disk. We show that its fluctuations from circularity are, with high probability, at most logarithmic in the radius of the disk, answering a question posed by Lawler in 1995. These logarithmic fluctuations were predicted numerically by chemical physicists in the 1980's. We also show that certain space-time averages of the fluctuations from circularity converge in law to a variant of the Gaussian free field. (Received January 05, 2011)