1120-60-206   **Jack Hanson*** (`jhanson@ccny.cuny.edu`). *Chemical distance in critical percolation.*
In critical two-dimensional Bernoulli percolation, fraction $1/2$ of the edges of the graph $\mathbb{Z}^2$ are erased independently. The resulting graph has connected components and "holes" appearing on all scales. As a result, the chemical (graph) distance inside large connected components is conjectured to grow superlinearly in the Euclidean distance according to a chemical distance exponent, and some results in this direction are known. For instance, the shortest crossing of the box $[-n, n]^2$ has length $S_n > n^{1+\epsilon}$ with high probability, and is no longer than the unique lowest crossing, whose length L_n is known to scale as $n^{4/3}$. Kesten and Zhang asked whether $S_n = o(L_n)$; we will discuss recent work which gives an affirmative answer to this question, as well as some results on point-to-point and point-to-box distances.

Joint work with M. Damron and P. Sosoe. (Received February 22, 2016)