

**Title:**

Prudent walk in dimension 6 and higher

**Abstract:**

A nearest-neighbor path of finite length on the  $d$ -dimensional Euclidean lattice is called `_prudent_` if no step of the walk is in the direction of a previously visited site. Its self-avoidance constraint is thus stronger than that for (classical) self-avoiding walk. We study the uniform measure of such walks.

We prove that the prudent self-avoiding walk converges to Brownian motion under diffusive scaling if the dimension is large enough. The same result is true for weakly prudent walk in dimension  $d > 5$ . A challenging property of the high-dimensional prudent walk is the presence of an infinite-range self-avoidance constraint. Interestingly, as a consequence of such a strong self-avoidance constraint, the upper critical dimension of the prudent walk is five, and thus greater than that for classical self-avoiding walk.

Joint work with Lorenzo Taggi and Niccolo Torri.