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When “Flow Free” is Played on a Torus.

“Flow Free” is a game played on smart phones. In this game, there are several colored dots in a square grid, and the task is to draw pipes to connect pairs of dots of the same color to create a flow, subject to the following two constraints: the pipes must cover all the squares in the entire grid, and pipes cannot cross or overlap each other.

In this talk, we will extend the game from square grids on a rectangular board to an L-shaped board, as well as to a torus and a higher dimensional torus. We will discuss some sufficient conditions to configure the colored dots so that there is a flow between them. This project is closely tied with Hamiltonian-connected and Hamiltonian-laceable graphs. (Received September 12, 2016)