



Talks by rising stars of neuroscience

Space wrapped onto a grid cell torus

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Entorhinal grid cells, so-called because of their hexagonally tiled spatial receptive fields, are organized in modules which, collectively, are believed to form a population code for the animal's position. Here, we apply topological data analysis to simultaneous recordings of hundreds of grid cells and show that joint activity of grid cells within a module lies on a toroidal manifold. Each position of the animal in its physical environment corresponds to a single location on the torus, and each grid cell is preferentially active within a single "field" on the torus. Toroidal firing positions persist between environments, and between wakefulness and sleep, in agreement with continuous attractor models of grid cells.

Event link:

<https://www.crowdcast.io/e/wwneurise/>