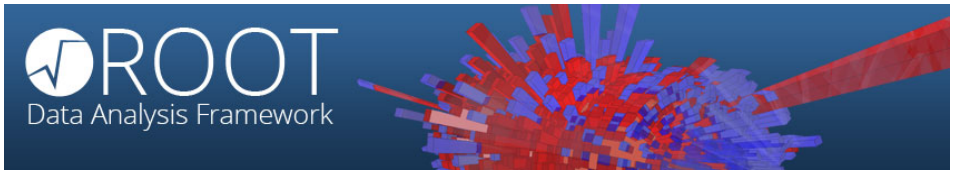


Contribution ID: **11** Type: **Presentation**

# Simulating Grid Cells using ROOT

*Thursday 17 September 2015 12:00 (20 minutes)*

Grid cells are neurons in the entorhinal cortex of rats and other mammals that exhibit a very peculiar behavior: they fire at periodic locations that cover the animal’s environment in a regular, hexagonal lattice. Having a firing behavior that is highly correlated with the animal’s location grid cells might provide a rare view on the general principles by which neurons in the higher-order parts of the cortex process information. Based on this hypothesis we developed a computational model of grid cells that postulates a dendritic representation of each cell’s input space that is learned by a self-organizing process. We implemented this model and performed extensive simulations using the ROOT data analysis framework. In this context, key features that are essential for our work consist in the automatic serialization / deserialization of complex data structures, efficient and fast storage and retrieval of serious amounts of log data, fast and powerful visualization and analysis, as well as the fully featured C++ interpreter.

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**Session Classification:** Presentations

**Track Classification:** Presentations