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## GNA —high performance fitting for neutrino experiments

*Tuesday 5 November 2019 11:00 (15 minutes)*

GNA is a high performance fitter, designed to handle large scale models with big number of parameters. Following the data flow paradigm the model in GNA is built as directed acyclic graph. Each node (transformation) of the graph represents a function, that operates on vectorized data. A library of transformations, implementing various functions, is precompiled. The graph itself is assembled at runtime in Python and may be modified without recompilation.

High performance is achieved via several ways. The computational graph is lazily evaluated. Output data of each node is cached and recalculated only in case it is required: when one of the parameters or inputs has been changed. Transformations, subgraphs or the complete graph may be executed on GPU with data transferred lazily between CPU and GPU.

The description of the framework as well as practical examples from Daya Bay and JUNO experiments will be presented.

### Consider for promotion

No

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