Mikołaj Kałuszyński - The Araucaria Project: Using Graph Databases for Astronomical Data on the Example of the "fits-warhouse" System

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These days, observational astronomy collects enormous volume of data. Most of this volume is made of broadly defined measurements and products of those measurements processing. Along with this measurement data, big amount of structured metadata has to be processed and maintained. Also, the research results has usually the form of structured data. The examples of such kind of data are respectively: FITS files headers and derived properties of astronomical objects.

We present how the problem of storing, analyzing and maintaining relationships between structured data can be addressed using graph databases, which is relatively novel approach to database management systems. The demonstration is based on the current implementation of fits-warehouse –a database of metadata of the Aruacaria project's FITS files library, along with parameters of observed objects. The fits-warehouse uses the neo4j graph database engine and stores around 10 milion of records.

Primary author: KAŁUSZYŃSKI, Mikołaj (Nicolaus Copernicus Astronomical Centre, Polish Academy of Sciences)