CANFAR Software-as-a-Service for NuGrid data exploration

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The NuGrid collaboration releases comprehensive data sets of stellar evolution and explosion simulations including detailed nucleosynthesis data, pre-suprenova evolution data as well as low-mass stellar evolution tracks. The datasets are made available via a Virtual Observatory distributed storage implemented on the Canadian Advanced Network for Astronomical Research (CANFAR) are publicly available and comprised of the following:

> Full stellar evolution calculations for 2 metallicities and 9 initial masses from 1.65 to 60 solar masses including radial profiles at every time step.
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> Abundances of >1000 isotopes for every zone in each stellar model for every 20th time step.
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> Yield tables for all stable isotopes for each model

We present new capabilities for the exploration of NuGrid datasets. These include several methods to interact with the large NuGrid datasets including visualization and data extraction. In spite of the magnitude of the data (approximately 3.5TB at present and growing), it can be interactively explored remotely using new networked data access technologies presently developed by CANFAR. Exploration takes place through web-based sessions connecting to CANFAR virtual machines, or through browser based Python interactive notebooks.