

Java Analysis Tools for Element Production Calculations in Computational Astrophysics

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We are developing a set of extendable, cross-platform tools and interfaces using Java and vector graphic technologies such as SVG and SWF to facilitate element production calculations in computational astrophysics. The Java technologies are customizable and portable, and can be utilized as stand-alone applications or distributed across a network. These tools, which have broad applications in general scientific visualization, are currently being used to explore and analyze a large library of nuclear reaction rates and visualize results of explosive nucleosynthesis calculations with compact, high quality vector graphics. The facilities for reading and plotting nuclear reaction rates and their components from a network or library permit the user to easily include new rates and compare and adjust current ones. Sophisticated visualization and graphical analysis tools offer the ability to view results in an interactive, scalable vector graphics format, which leads to a dramatic (ten-fold) reduction in visualization file sizes while maintaining high visual quality and interactive control.

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