

# Abstract for the PyTantrix

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## **Abstract**

The goal of the PyTantrix is to provide a mechanism to visualize a knot (in the mathematical sense) and its crossing map in parallel in a setting that allows the orientation of the knot to be controlled. Given a knot, its crossing map is simply the locuses of lines-of-sight that produce a projection of the knot that includes a cusp of one (or more) Reidemeister moves; normalized and projected onto a unit sphere. The majority of this has been implemented before, using both the C and Java programming languages, however, the PyTantrix uses the Python scripting language and the pyszg wrapping of the syzygy system for distributed graphics in the CUBE. There was, however, a significant addition in this version of the tantrix program – the tertiary indicatrix, which shows the existence of trisecants in the knot, has been completely calculated for the first time. The algorithm is visible and documented in the source code (`knot.py`). Peter Brinkmann helped with the class structure of the Python code.