

# Simulating the Beam-Beam Interaction

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## Abstract

A graphical method of analyzing the beam-beam interaction was developed in *Mathematica*, using data from ODYSSEUS, a program which simulates the interaction between electron and positron bunches in a storage ring. The analysis focused on the transverse phase, amplitude, and frequency of oscillation of the beams. Transverse motion was shown to be strongly correlated between beams, and transient resonant behavior was observed. Coherent motion contributes to the beam-beam instability at CESR.