

Ellipse-Orientation Steering: A Control Law for Spacecrafts and Satellite-Launch Vehicles (SLV)

Syed Arif Kamal

PhD; MA (Astrophysics), Johns Hopkins, United States; MS, Indiana, Bloomington, United States
 Professor and Chairman, Department of Mathematics, University of Karachi,
 Karachi 75270, Pakistan; profdrakamal@gmail.com

The mission design is not complete unless the trajectory calculation includes checks for cross-range error and down-range error. Ellipse-Orientation Steering, a control law expressed in terms of the elliptic-astrodynamical-coördinate mesh, states conditions, which must be satisfied for no down-range error and no cross-range error (Fig. 1). Mathematical proof was given and protocols for elimination of down-range and cross-range errors described — the proof is available in a conference-proceedings paper <https://www.ngds-ku.org/Papers/C55.pdf> (page 181).

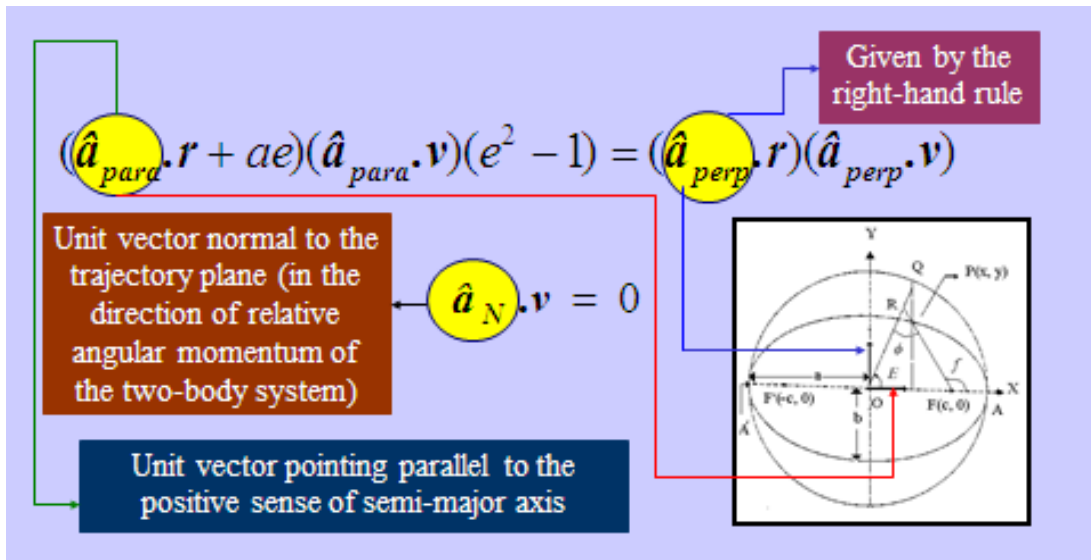


Fig. 1. Pictorial representation of the ellipse-orientation steering

Keywords: Astrodynamics • Elliptic-astrodynamical-coördinate mesh • Guidance schemes • Navigational trajectories • Two-body problem

Web address of this document: <https://www.ngds-ku.org/Presentations/Ellipse.pdf>