

\sin are both +ve in the first quadrant, where $|p|$ has its max, and -ve in the third quadrant where there is a local maximum for $|p|$ for large values of a (due to the $a \sin$ term) which is much smaller than that in the 1st quadrant. The asymmetry is also seen for librational phase curves.

The local maximum for p occurs at about $q_1 = (2n - 2/3)\pi$ roughly.

For greater values of E than the separatrix energy, \dot{q} does not change sign, and q increases or decreases without bound.

(7/7)