

# Periodograms

- Periodograms of ion mixing ratios vs. time for DOY 275-320 of year 2000 made using Lomb-Scargle method.
- Peaks near frequency of  $0.1 \text{ hours}^{-1}$  and harmonics
- Blowup of region around  $0.1 \text{ h}^{-1}$  reveals two separate peaks:
  - corotation frequency (System III,  $0.1001 \text{ h}^{-1}$ )
  - 1.4% slower than corotation ( $0.09935 \text{ h}^{-1}$ )
- No peak seen at traditional System IV frequency ( $\sim 0.09781 \text{ h}^{-1}$  2.9% slower than System III)
- S IV shows much stronger peak around  $0.05 \text{ h}^{-1}$  than at  $0.10 \text{ h}^{-1}$