ALFA Zone of Avoidance (ZOA) Survey

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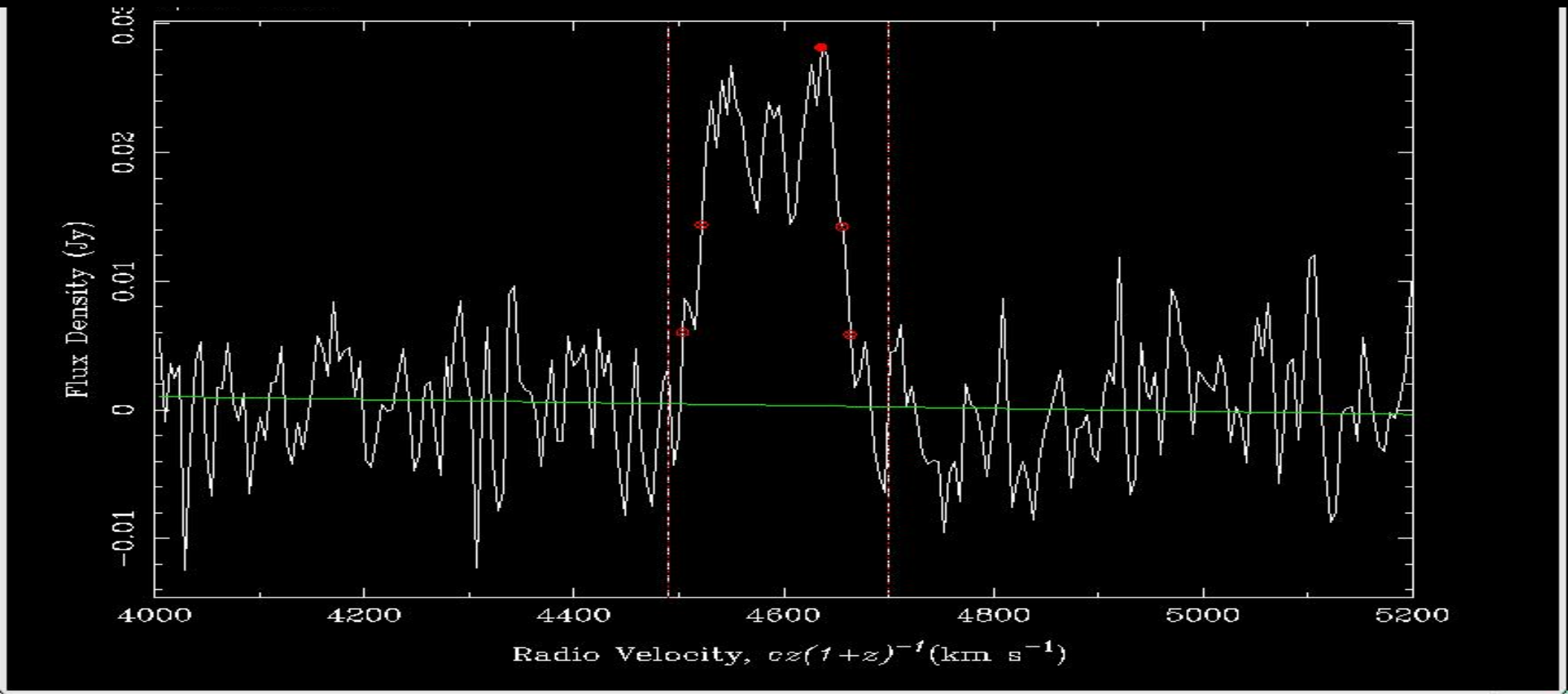
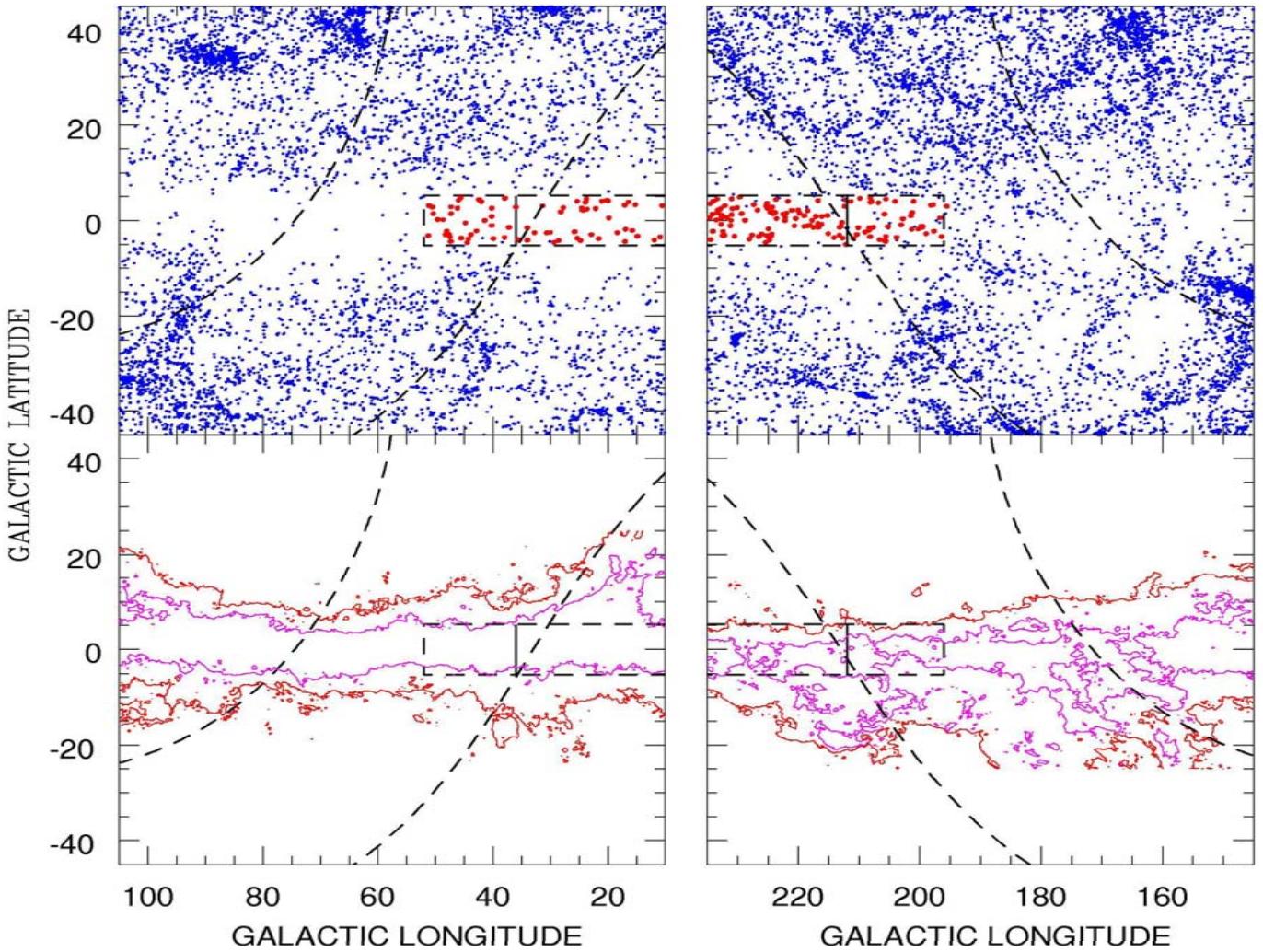


- ALFA ZOA Survey
  - Commensal with GALFA and PALFA surveys of ZOA region
- Why survey the ZOA at HI?
  - Scientific motivations similar to that of ALFALFA
    - e.g., HIMF/missing satellite problem, study of HVCs, etc.
    - like ALFALFA, the sky being surveyed is unbiased; only determined by orientation of our galaxy
  - Mapping large scale structure in the ZOA
    - ZOA has been narrowed by deep optical/IR searches, but both fail in regions of high extinction and stellar confusion
      - HI can still be seen in these regions
    - 3d connectivity of LSS across ZOA
    - Structures like the Pisces-Perseus Supercluster and the Great Attractor are partially hidden by Milky Way

- HI Parks Zone of Avoidance Survey (HIZOA)--surveyed mostly in southern hemisphere to 6 mJy/beam rms

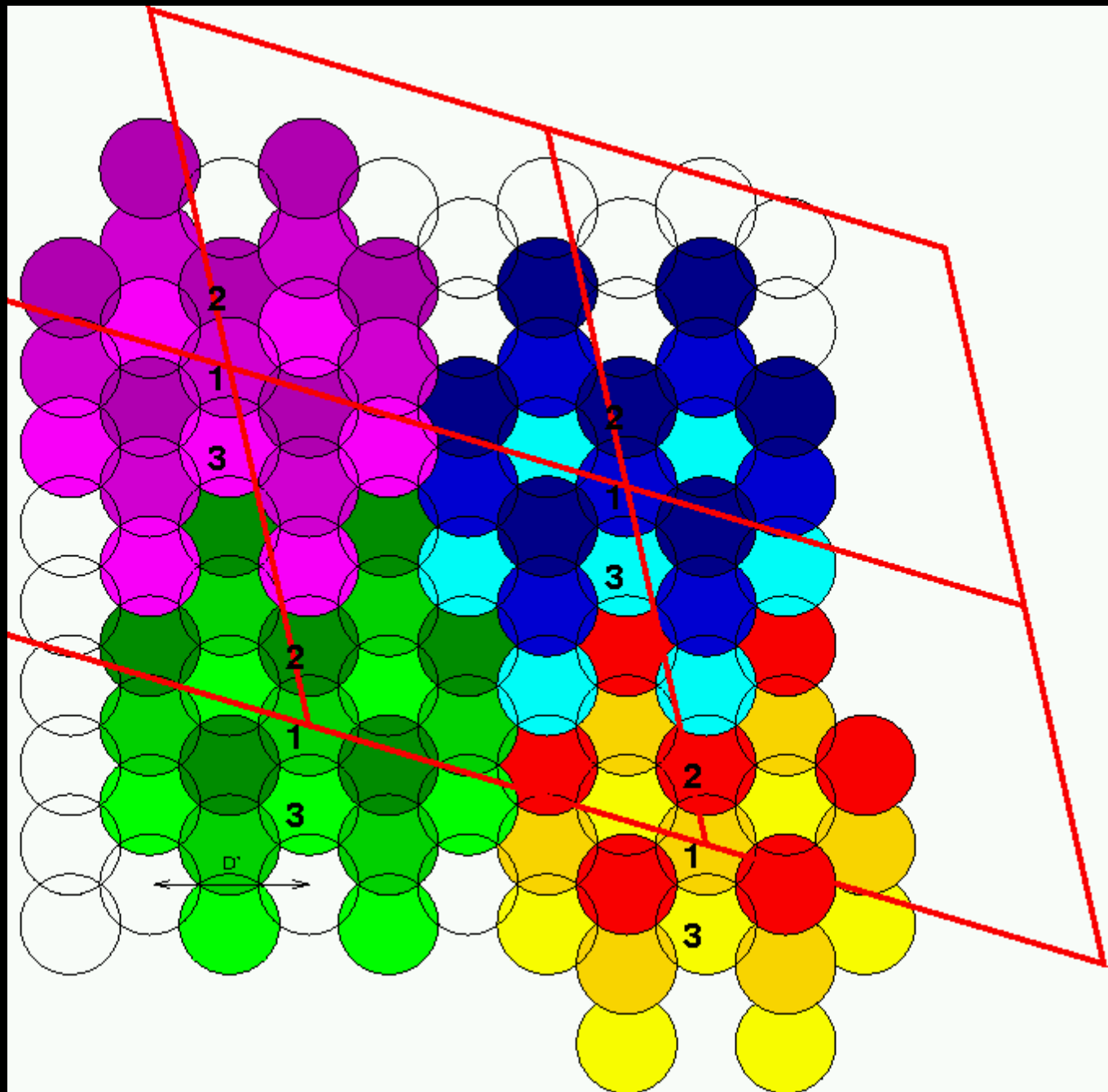
ZOA in the Arecibo sky. **TOP** Blue: galaxies in the literature within 12,000 km/s in and near regions accessible to AO. Red: HIZOA galaxies. **BOTTOM** Red: A_B=1 mag of extinction contour; Blue: A_B=3 mag of extinction contour.



- ZOA plan
  - GALFA
    - map within 10 degrees of plane, across 45 degrees longitude of inner Galaxy, 45 degrees longitude of outer Galaxy (~5 sec integration time)
  - PALFA
    - map within 5 degrees of plane, across 45 degrees longitude of inner Galaxy (268 sec integration time), 45 degrees longitude of outer Galaxy (134 sec integration time)

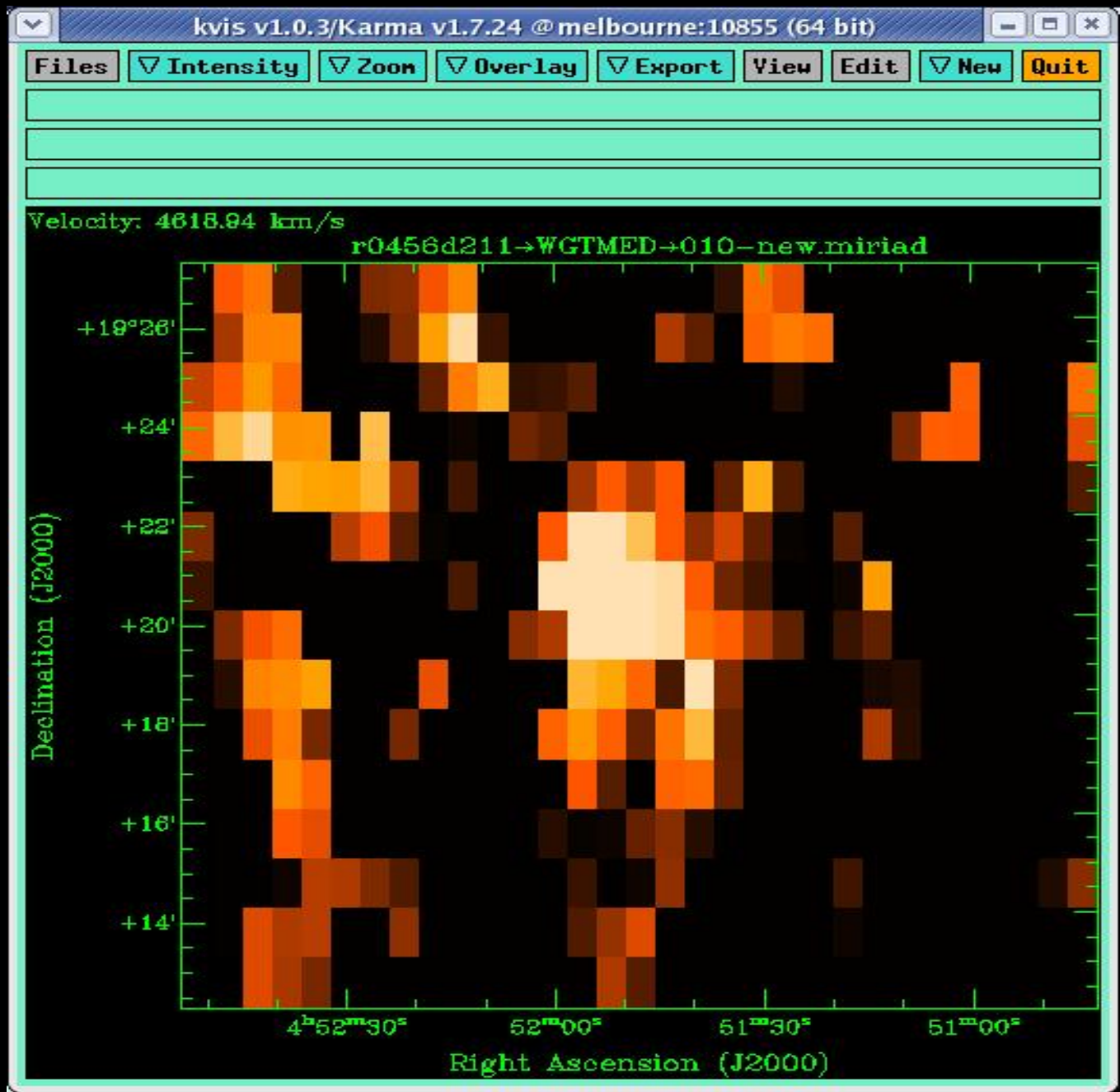
- PALFA-ZOA
  - Leapfrog tiling
    - point and stare at one spot in the sky, then move beam to next part of sky

- Strategy: sparse (1/3) sampling out from |b|=0 to higher latitudes, then fill in rest of sky
  - PALFA survey has already started; proposal for 1st year of PALFA-ZOA was given an 'A' grade earlier this year, but we can't start until PALFA spectrometer or EALFA spectrometer is ready (early 2007)

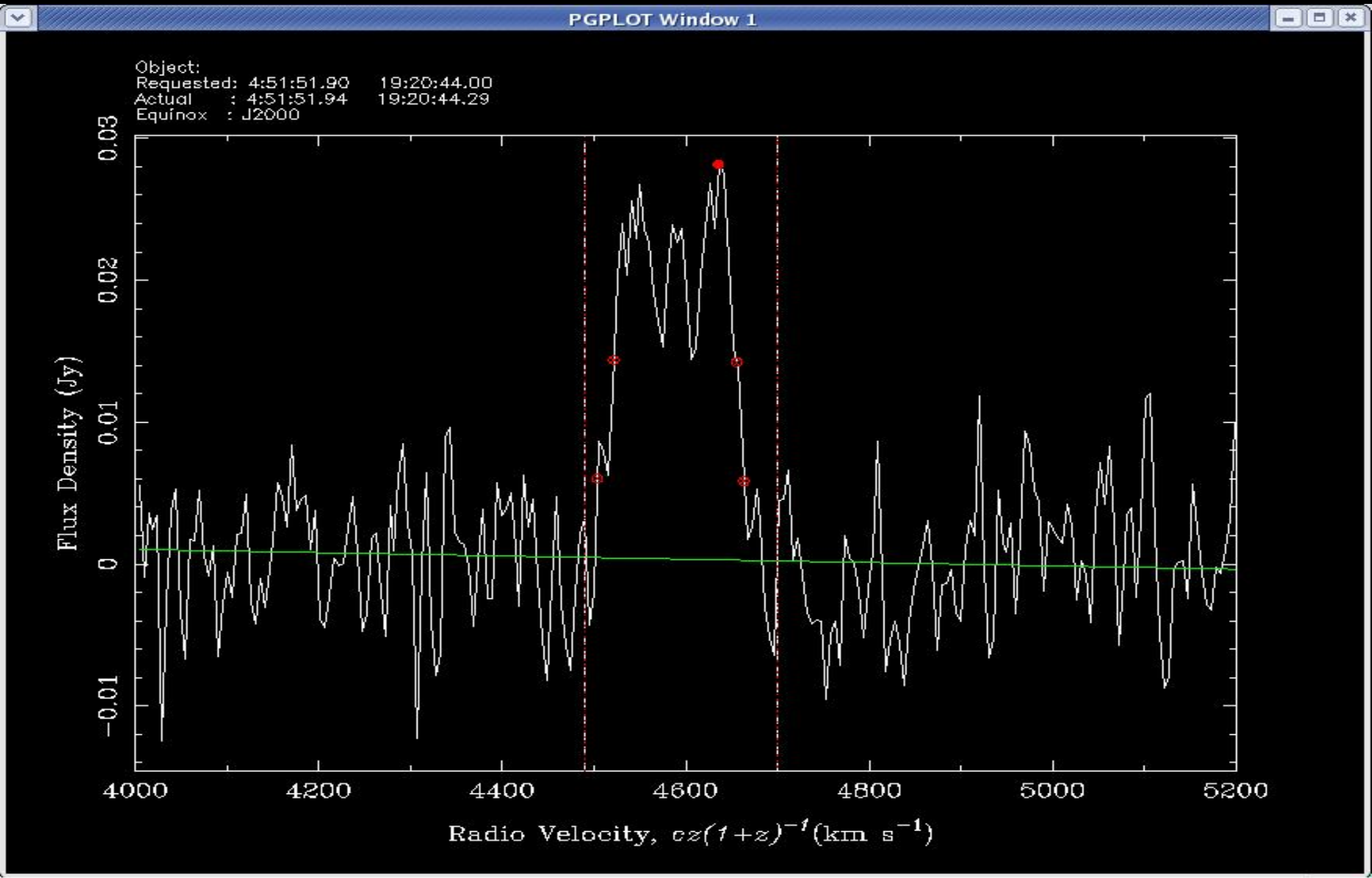


- GALFA-ZOA
  - Status
    - We have covered ~140 deg^2 in precursor observations in 2005-2006
      - data is in various stages of reduction
    - Proposal for inner galaxy part of real survey was given an 'A' grade in January, but corresponding GALFA proposal awaits critical review
  - Observational setup
    - basketweave method: telescope slews back and forth in declination while RA drifts with sky; covers ~4 degrees in 3 minutes each direction
    - we observe with WAPPS, while GALFA observes with their own spectrometer
    - bandwidth: -2600-18,400 km/s
    - spectral resolution: ~5 km/s (HIZOA: ~13 km/s)
    - angular resolution: ~3.5' (HIZOA: ~15.5')

- Data reduction pipeline: closely follows that of AGES
  - Livedata and Gridzilla get you gain-corrected, calibrated, gridded dataset
  - Look through data cube for galaxies by eye, building up catalog of possible detections, and then going back to confirm later by inspecting individual profiles.



- Measure HI parameters using Miriad.
- Check coordinates against possible counterparts in NED.



The Near Future

- GALFA-ZOA
  - refinement of HI parameter extraction procedure
  - completion of precursor data reduction
  - beginning of real survey: date TBD???
- PALFA-ZOA
  - development of PALFA-ZOA pipeline
  - survey to begin early 2007