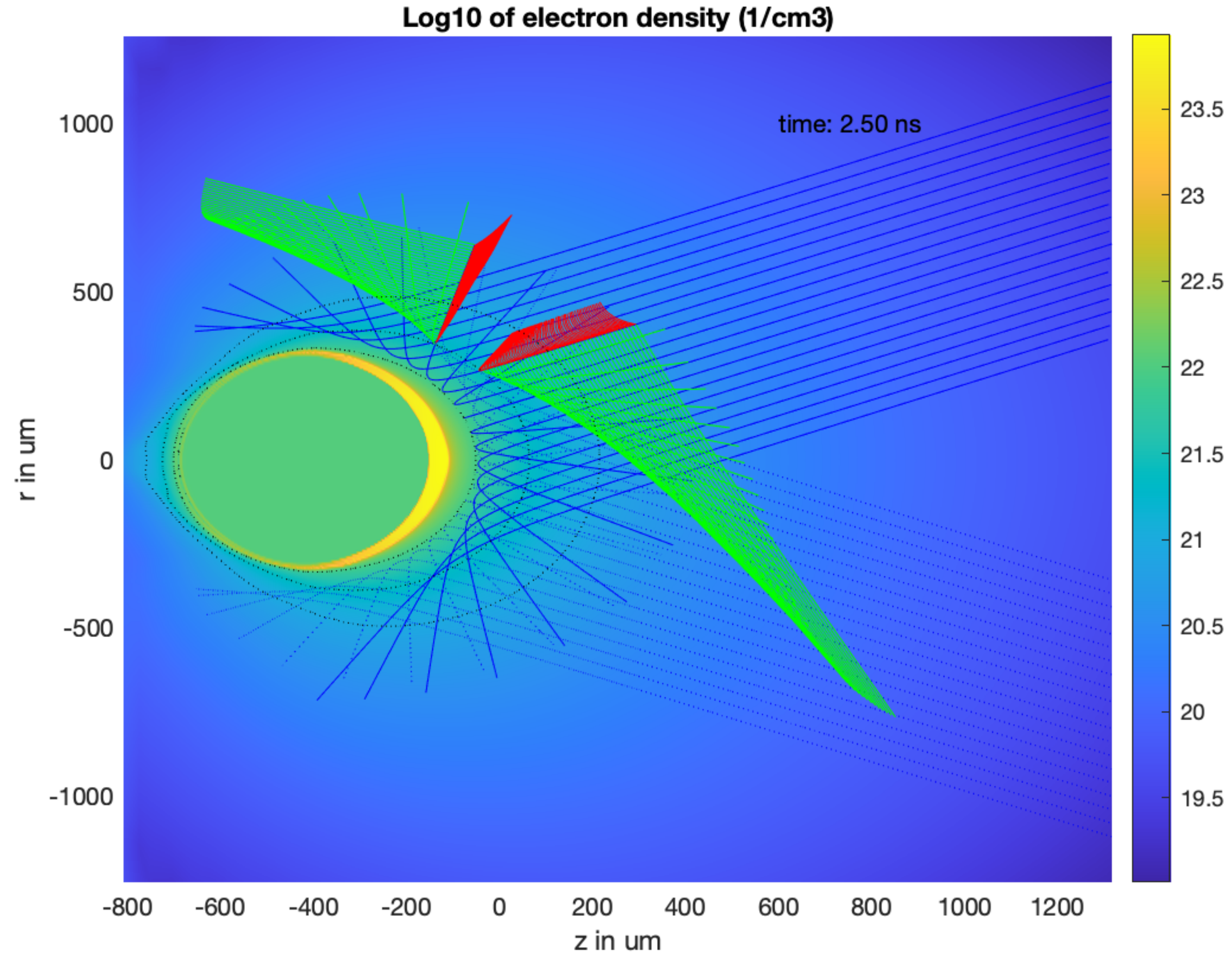# Simulation Meeting

July 10, 2020

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Plot

- Solid blue is incident light from 23 degrees wrt +ve z axis

- Dotted blue is incident light from -23 degrees

- Green is Raman

- Red is Langmuir

Log10 of electron density (1/cm3)

Functions

- checkPush

  - Checks if a ray is integrated far enough so that refraction due to change in density is small enough to get an accurate exit angle

- checkDetector

  - Looks at the last 5 points in the trajectory of each ray to check if a ray's exit angle is within the detector's acceptance

- cell2Histogram

  - Takes a 2D cell array made of numerical row vectors and puts it into a single row vector and makes a histogram of that data

Detector Scorecard

- Using a MATLAB structure called "detector" with fields:

  - AngPos - variable for angular position of the detector in degrees

  - AngAccept - variable for angular acceptance of the detector in degrees

  - Source - Single column cell array containing the source of the rays that hit the detector

  - Freq - 2D cell array made of row vectors containing the frequencies of rays that hit the detector. The column number corresponds to the source ray and the row number corresponds to the source in the same row in the Source field

Errors

- Error using delaunayTriangulation/pointLocation
  Data points in complex number format are not supported.
  Use REAL and IMAG to extract the real and imaginary components.

- Error using delaunayTriangulation/subsref
  The input must contain index values; entries with Inf, NaN, zero, negative, or fractional parts are not permitted.

Histogram

- 180 degree backscatter

- SRS from all 20 rays of both incident rays

- ~1000 Raman rays per incident ray - ~40 000 rays to integrate and check

Rays that hit Detector