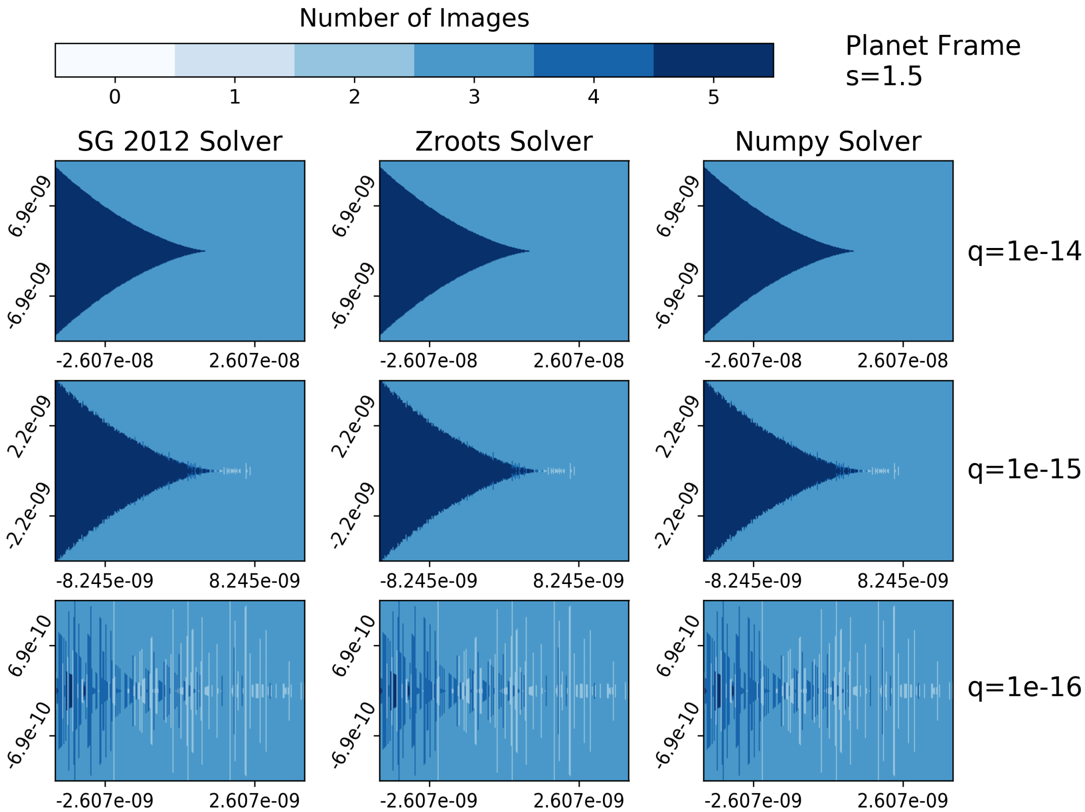

Figure 1: The number of images versus the position for each root solver in the planet frame. The rows coorespond to different values of the mass ratio, q. All solvers perform the calculations equally well in each row for the planet frame.

The next test determines how well the three solvers perform for decreasing values of the mass ratio. This test is done for the binary lens. The three solvers are: the numpy root solver, the method by Skowron and Gould 2012, and Numerical Recipes zroots method. This test uses the same methodology of plotting the number of images and the magnification on a grid of points in the source plane, and comparing the performance of each solver. All caluclations were done using the form of the polynomial derived in the planet frame, for a constant value of s. **Figure 1** shows the plot of the number of images, and **Figure 2** shows the plot of the magnification.

This simulation does not suggest any deviation in how well the solvers perform in the planet frame. They all make the same number of errors for a given mass ratio, q, as q approaches its lower limits. Regardless of the fact the solvers performed with the same accuracy, there is evidence in (insert citation) that the Skowron and Gould 2012 method performs the fastest.

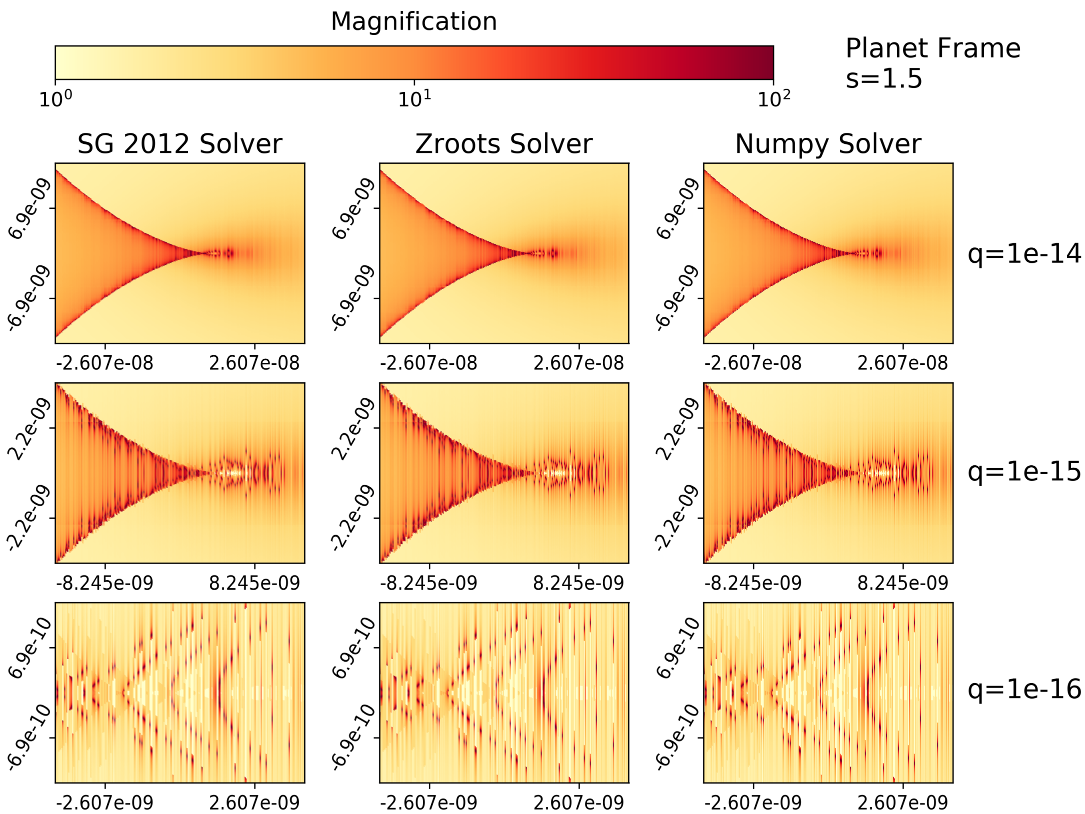

Figure 2: Same as **Figure 1**, except with magnification. Again, all solvers perform the calculations equally well in each row for the planet frame.