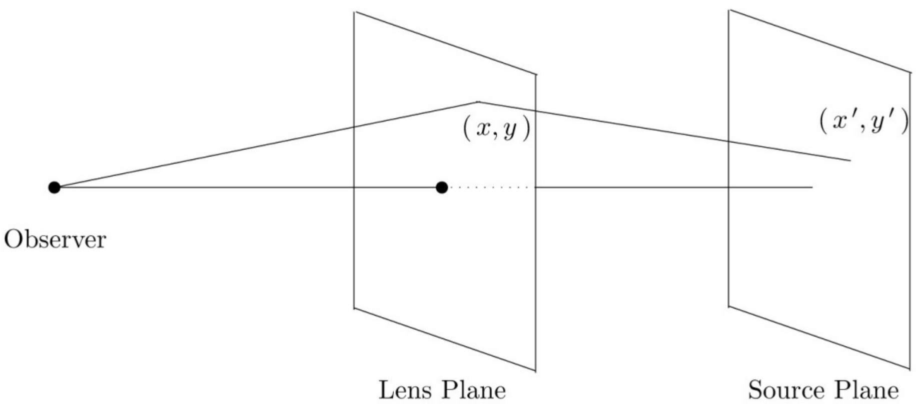
Magnification Map Techinque



L. Philpott

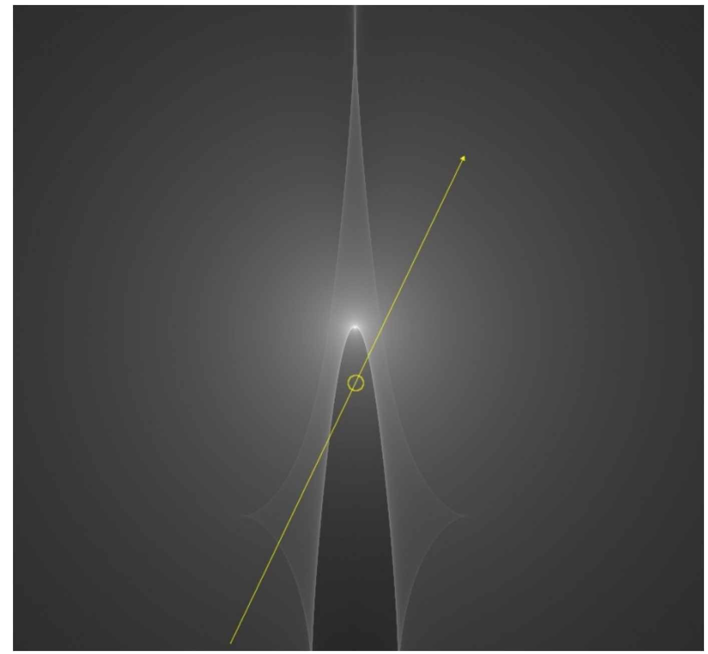
$$x' = x - \frac{m_1 x}{x^2 + y^2} - \sum_{i=1}^{n} \frac{m_i(x - x_i)}{(x - x_i)^2 + (y - y_i)^2},$$

$$y' = y - \frac{m_1 y}{x^2 + y^2} - \sum_{i=1}^{n} \frac{m_i(y - y_i)}{(x - x_i)^2 + (y - y_i)^2}.$$

A large number of rays are traced to produce the magnification map.

A source star track is laid down on this map.

The resulting light curve is compared to experimental data, and χ^2 is minimised.



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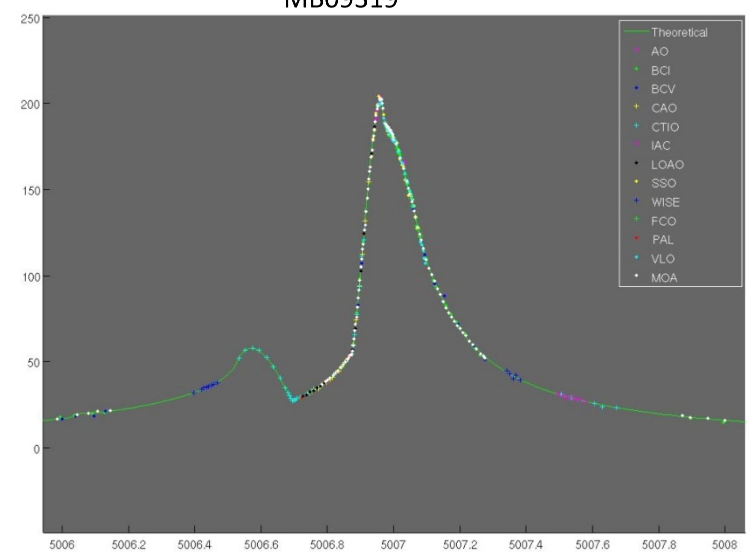

Two planet model – locations for a second planet in the lens plane

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Best fit for a single planet
Mass = 0.00039 lens star mass
Disance = 0.9756 Einstein radii

This graph shows possible locations of a 0.00003 mass second planet, and the associated χ^2 for a planet at each location.

χ^2 has yet to be normalised.

The areas with high χ^2 give excluision zones for planets of a mass greater than 0.00003.

These exclusion zones give information about the abundance of planets of various masses at various distances.