OGLE-2007-BLG-514: possible White dwarf – M dwarf binary event

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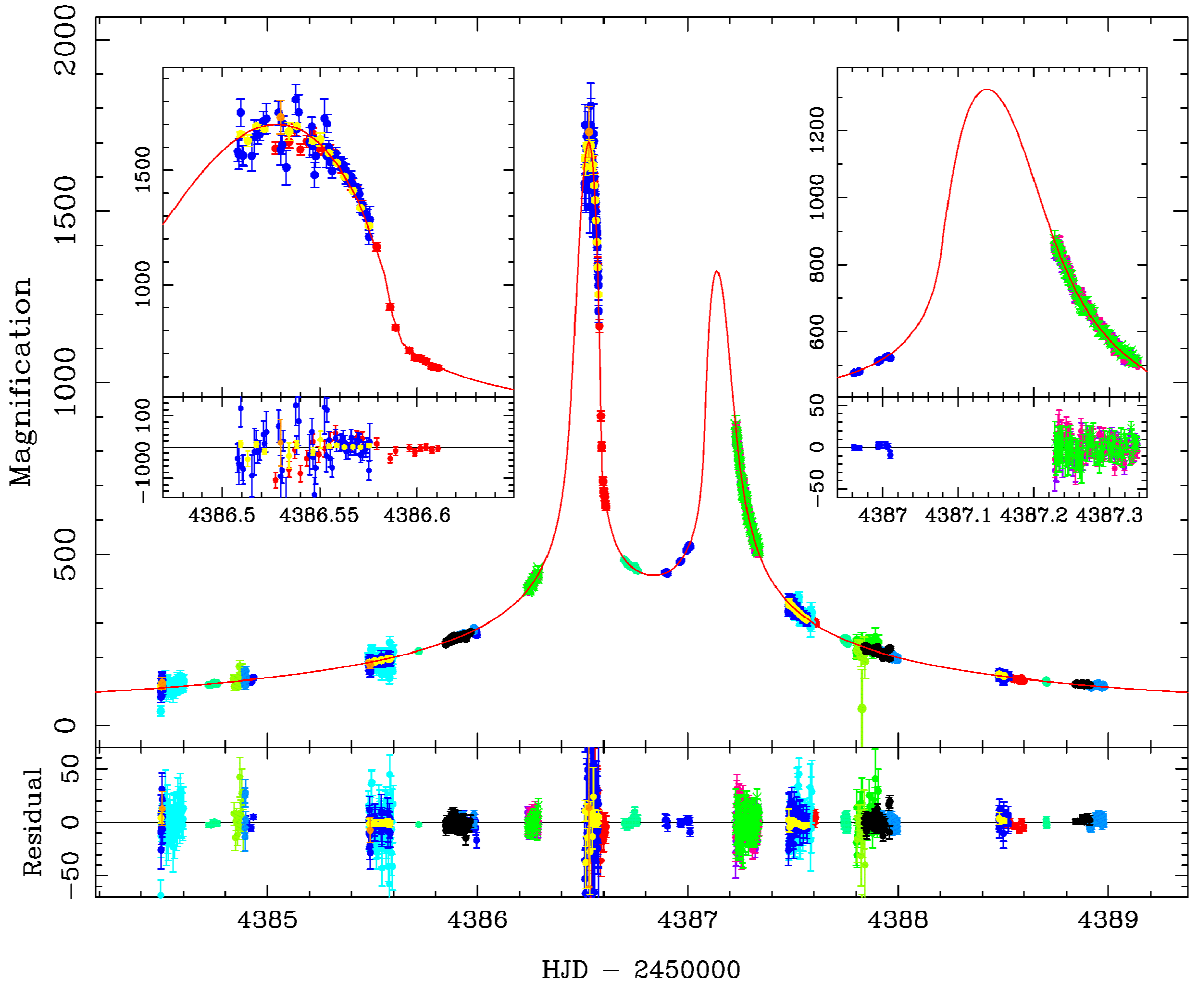
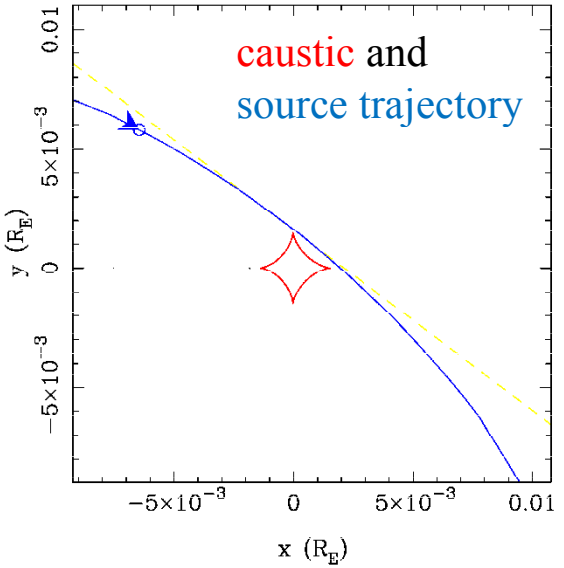


OGLE
MOA
Auckland
Bronberg
Canopus
CAO
CTIO H
CTIO I
CTIO V
Farm Cove
FTN
FTS
IRSF H
IRSF J
IRSF K
B&C I
B&C V



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◆ The best fit model with parallax and lens orbital motion effects (close separation, $u_0 > 0$)

parameters	values
t_0	4388.78
t_E	259.76
u_0	1.28 x 10^{-3}
q	0.31
d	0.06
θ [rad]	0.65
ρ	2.34 x 10^{-4}
$\pi_{E,N}$	-0.15
$\pi_{E,E}$	-0.008
ω [rad day^{-1}]	-0.039
ds/dt [day^{-1}]	0.0012

lens physical parameters

$$\theta_* = 0.43 \pm 0.02\,[\mu\text{as}]$$
$$\theta_E = 1.83 \pm 0.08\,[\text{mas}]$$
$$\mu = 2.58 \pm 0.12\,[\text{mas yr}^{-1}]$$
$$M_1 = 1.11 \pm 0.10\,[M_{\text{Sun}}]$$
$$M_2 = 0.35 \pm 0.03\,[M_{\text{Sun}}]$$
$$D = 2.46 \pm 0.31\,[\text{kpc}]$$

◆ Blending magnitude

If the primary lens star is a main sequence star, the blending magnitude obtained from the fits should be bright. For example, if a solar mass star like the Sun is placed at 2.5 kpc from the Earth, it should be observed as 16.8 mag. But, the blending magnitude is faint. So, the primary lens star may be a **white dwarf**.

data	source magnitude	blending magnitude
CTIO I	21.7	20.6
CTIO V	24.5	…
MOA Red	21.8	19.6