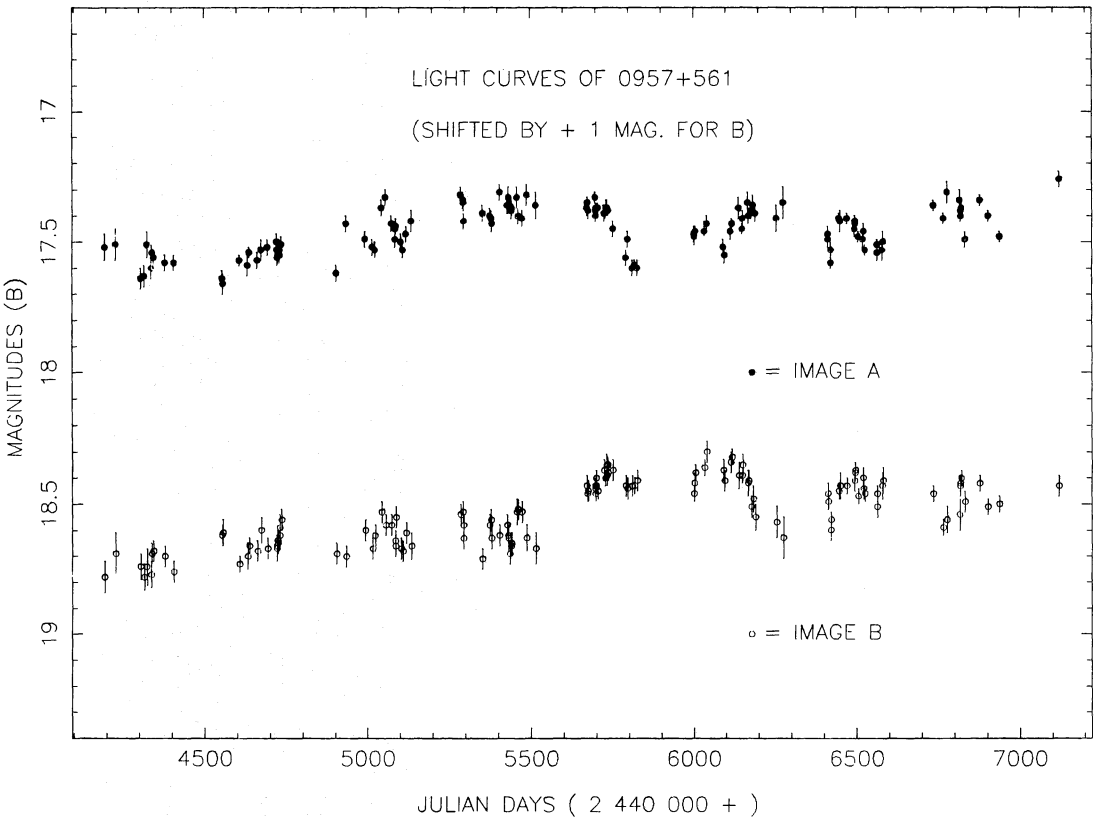

Fig. 5. The observed light curves of the 2 images of 0957+561 (all data points from Table 3)

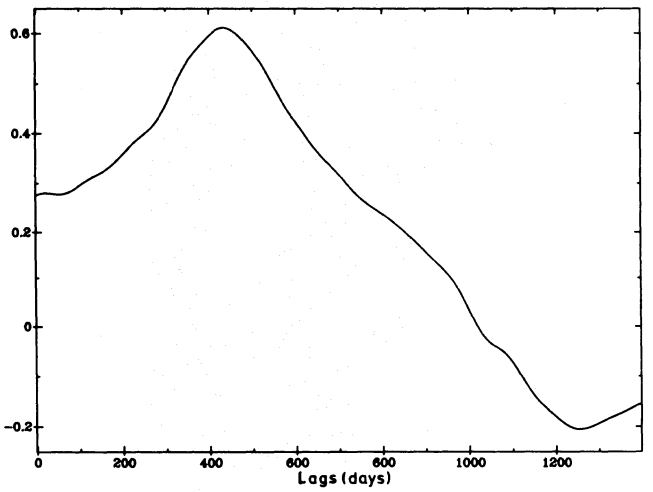

Fig. 6. The cross-correlation function for interpolated light curves. The correlation peak has its maximum at $C_{A,B} = 0.62$, $\Delta t = 419$ days

is the number of points. Here, with $\varepsilon \neq 0$, a single data point on A could be involved in several couples (A, B), and the number of *independent* points for R is about 20, thus $t \simeq 3.7$. This would mean that the fit with a degree 3 is significantly better than with a degree 0 at a confidence level of 99%. [However, this is only an indicative value, because of the arbitrariness on the choice of ε and τ, for example].

So, we can conclude cautiously that variations of the amplification ratio have been marginally observed from direct inspection of $R(t)$.

Another aspect is worth mentioning: If our choice of Δt is in error, the values of $B(t + \Delta t)$ and $A(t)$ are rapidly decorrelated and the residuals on R should increase. The same analysis was thus performed for 12 values of Δt between 380 and 450 days, and a local minimum was effectively observed around 415 days (Fig. 10).

A firmer clue, perhaps, in favour of the presence of micro-lensing is the value of R itself, found to be around 1. Compared, as suggested in Sect. 3.1, to the values for extended components, i.e.: $\simeq 0.73$ for the optical emission lines (Wills and Wills, 1980; Young et al., 1981) or $\simeq 0.64$ from the VLBI jet (components 2 and 3 in the mapping of Gorenstein et al., 1988), this indicates a possible micro-lensing enhancement of ≈ 0.3 mag. amplitude for image B. Such small amplitude and long duration events (very small variations during our 8-year monitoring) appear when a source is only approaching the caustic of a star and not actually crossing it (Young, 1981; Kayser et al., 1986). They have a good probability of being observed for image B, seen through rather dense parts of G_1.

4. Conclusions

1) This non-ambiguous measurement of $\Delta t(A, B)$ confirms the validity of the gravitational mirage theory and could be a starting point for further developments. The precision on its value could