

# QUASAR MICROLENSING AND DARK MATTER

HANS-WALTER RIX AND CRAIG J. HOGAN

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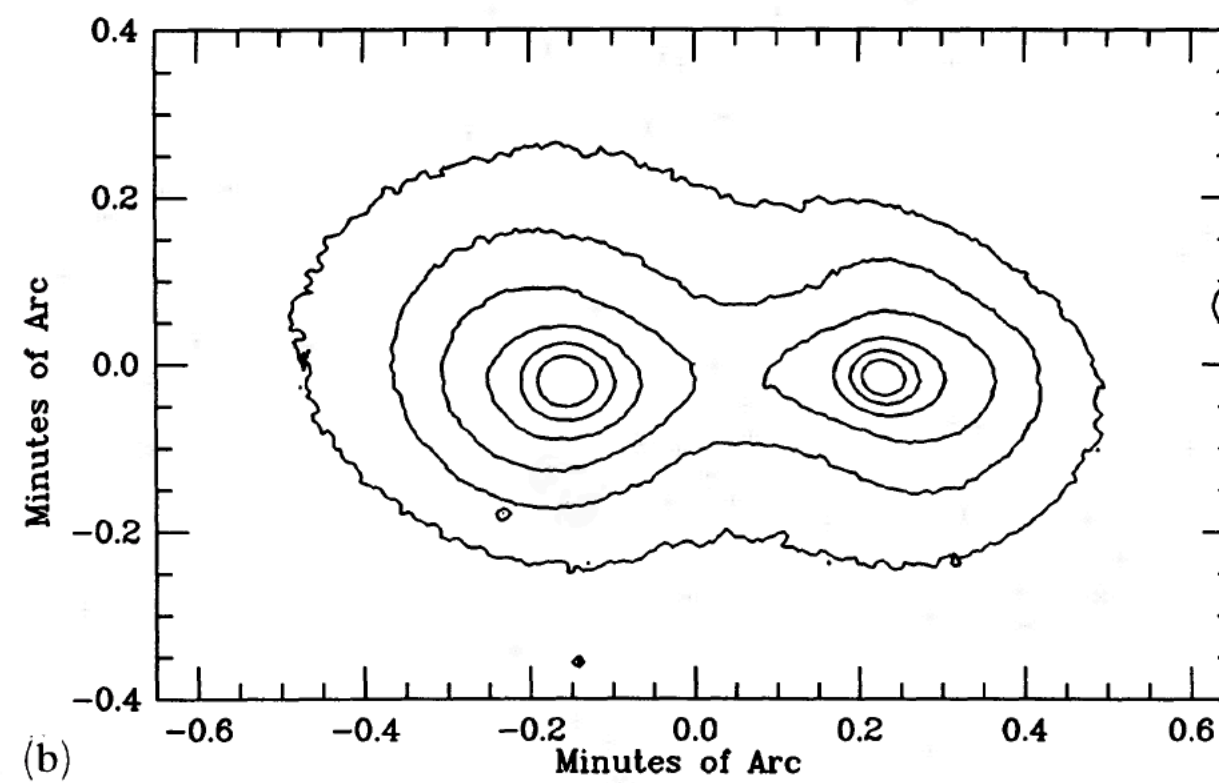
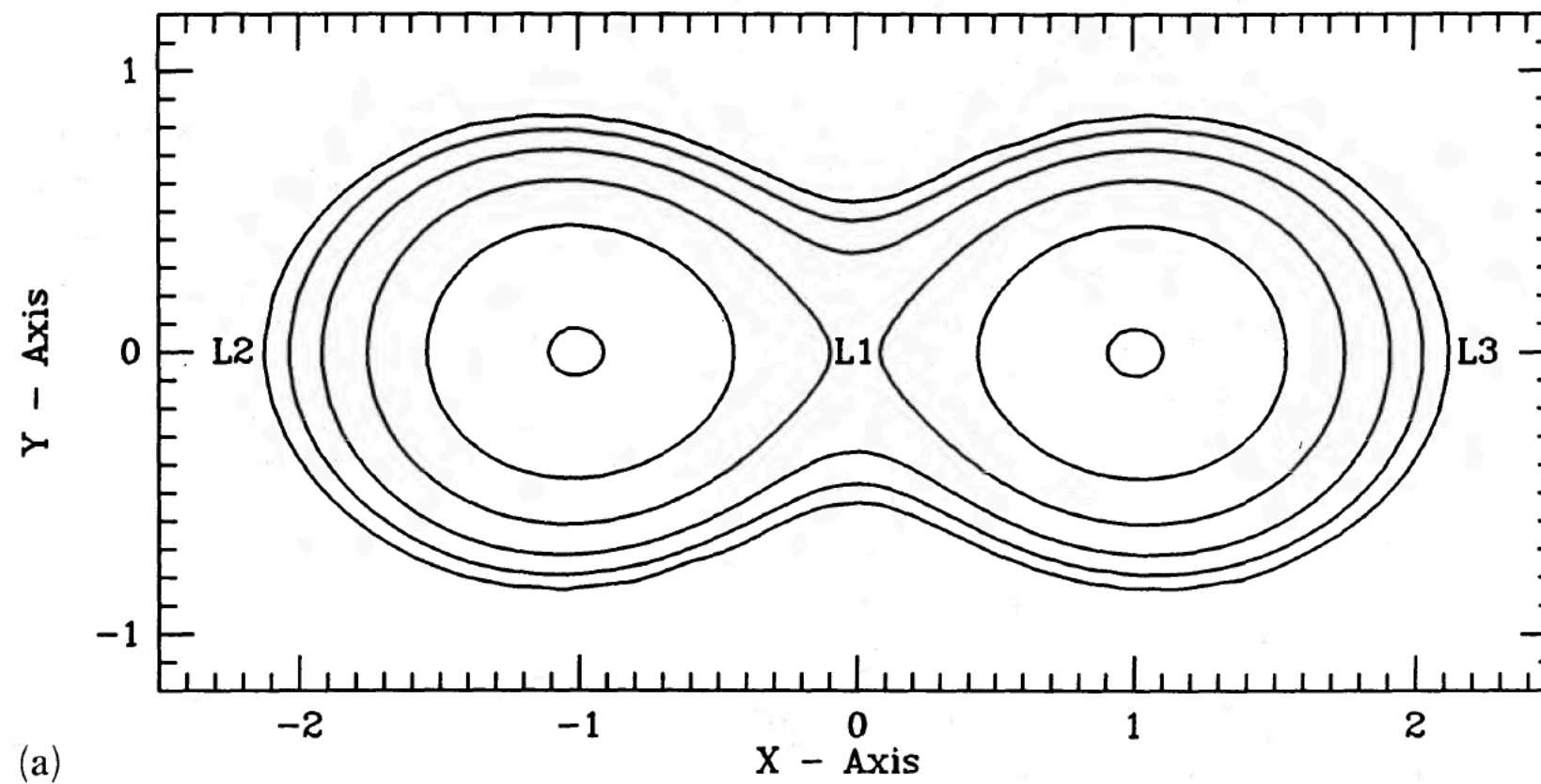
*Received 1987 September 30; accepted 1988 February 19*

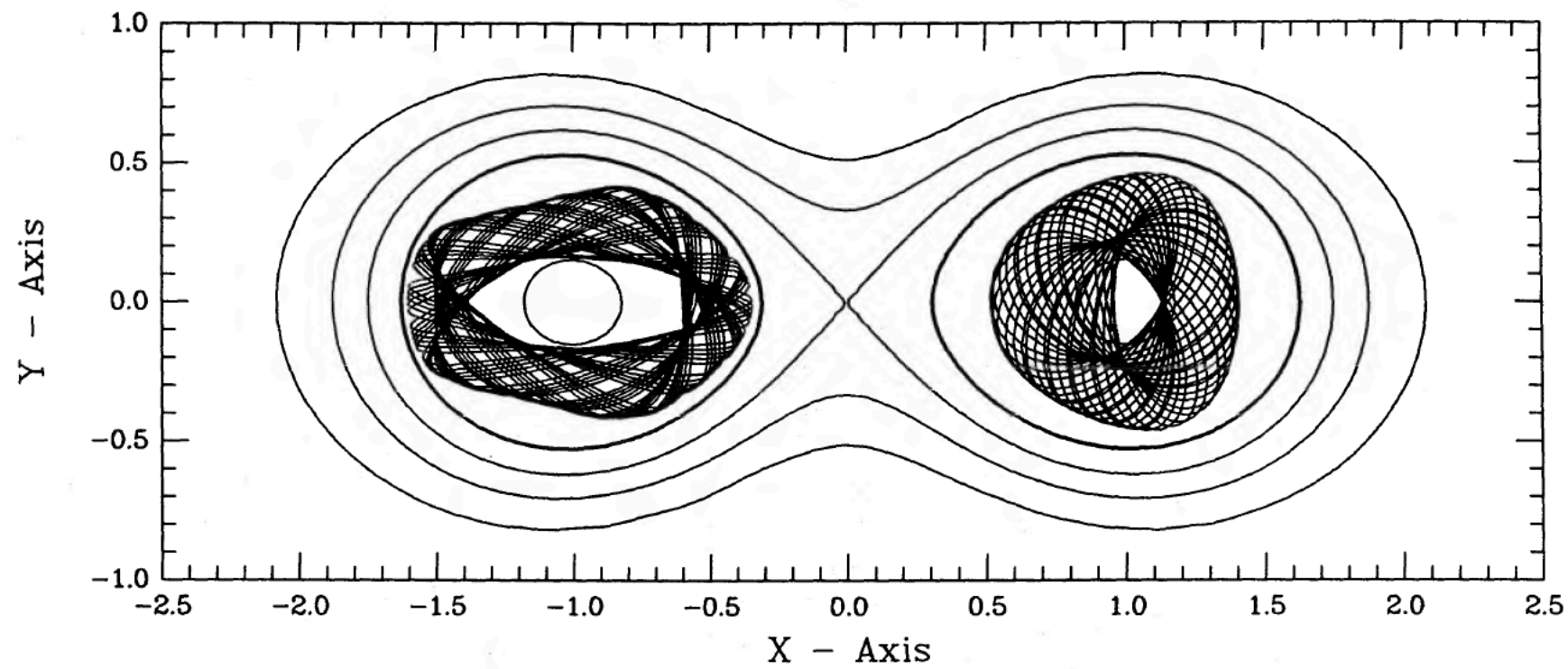
## **The dynamics of dumb-bell galaxies**

Hans-Walter R. Rix and Simon D. M. White *Steward*

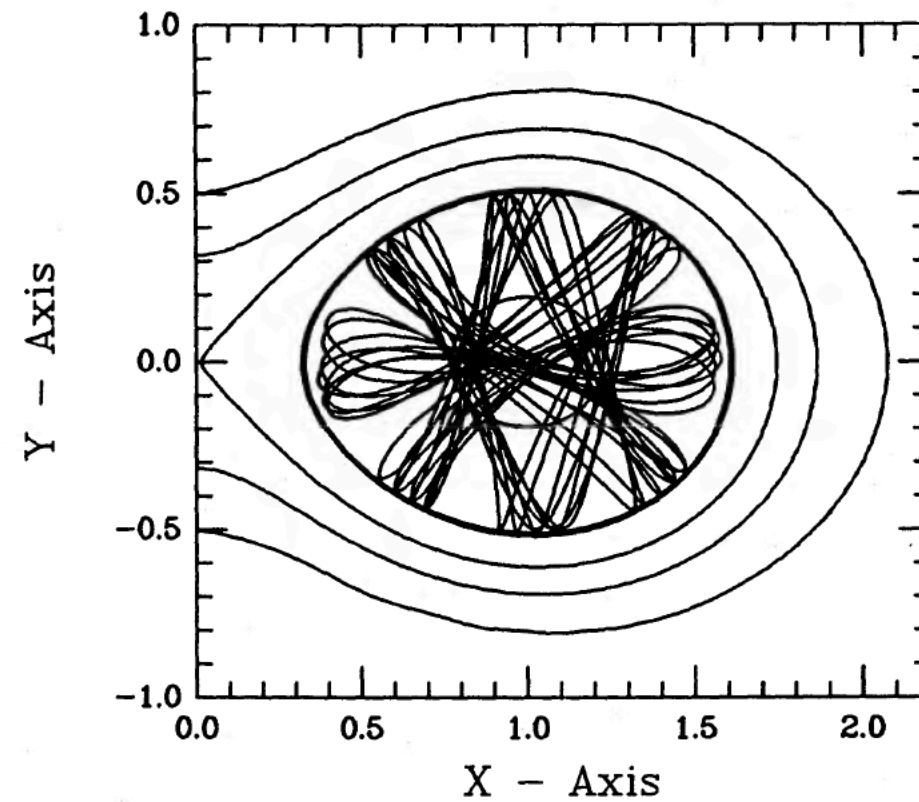
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Accepted 1989 April 6. Received 1989 April 5; in original form 1989 February 7





**Figure 7.** The left half of this diagram shows a prograde loop orbit in the equatorial plane ( $z=0$ ) of the dumb-bell potential. The underlying contours represent the pseudo-potential  $\Psi$  in the dumb-bell. The fat line shows the limiting contour  $\Psi = E_J(\text{orbit})$ . The right half shows a retrograde loop orbit of the same orbital 'energy'  $E_J(\text{orbit})$ .









# DISK COMPONENTS IN EARLY TYPE GALAXIES

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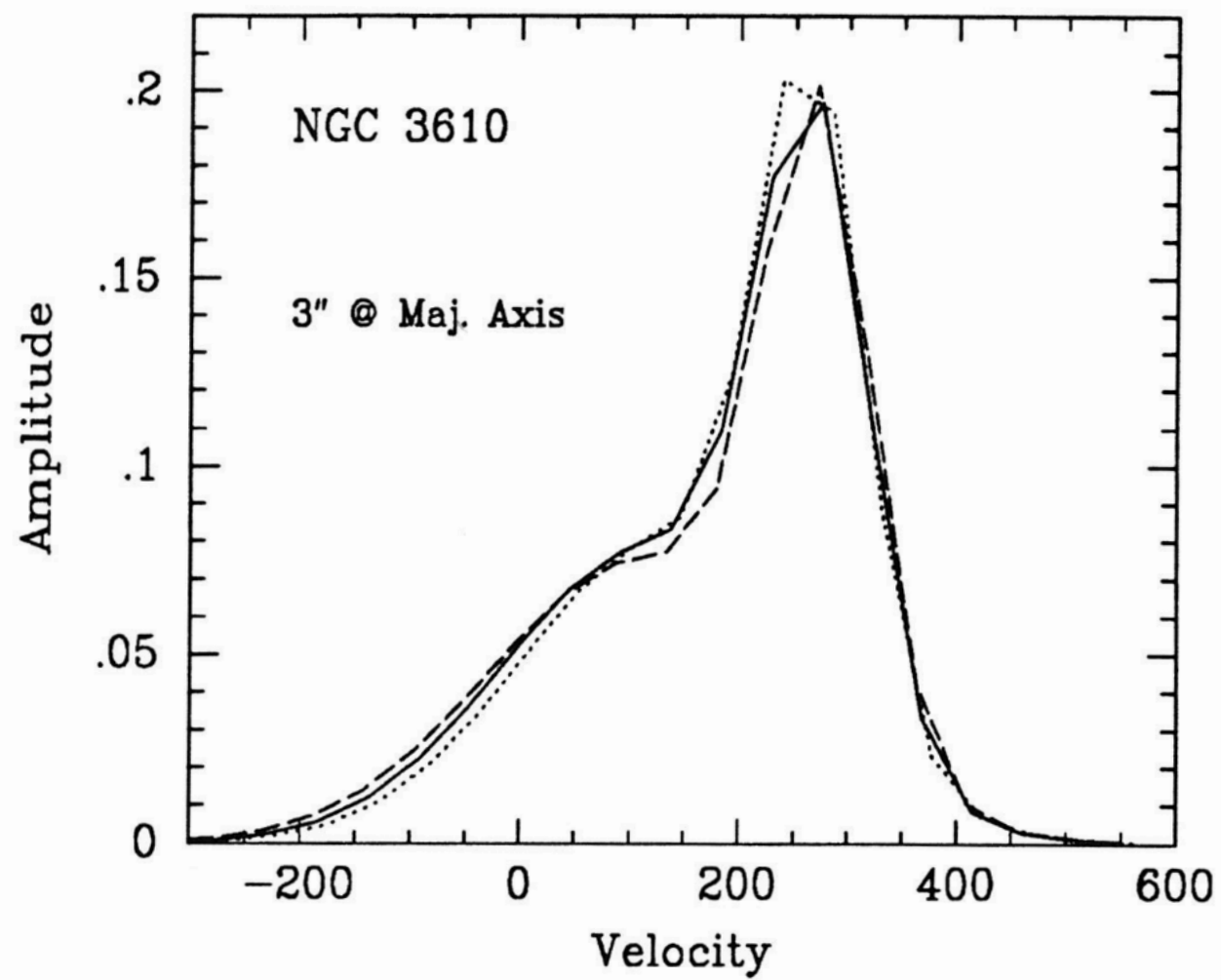
A Dissertation Submitted to the Faculty of the  
DEPARTMENT OF ASTRONOMY  
In Partial Fulfillment of the Requirements  
For the Degree of  
DOCTOR OF PHILOSOPHY  
In the Graduate College  
THE UNIVERSITY OF ARIZONA

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**CINCO de MAYO**  
**10K Race**  
**May 7, 1989**







Always notice when the  
cameras are switched on!



**CINCO de MAYO**  
**10K Race**  
**May 7, 1989**

