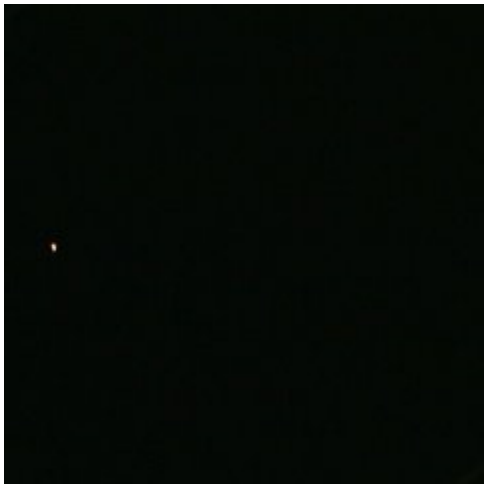
Answer #257

The answer is: (a), (b), (c), (d), (e), (f), (g), (h), (i), as seen in an mpeg video by clicking your mouse on the photograph below.



The entire system depends on the fact that the lens has a *concave*, rather than *convex* surface. This leads to perhaps the most interesting feature, the circular image seen when the star is directly in back of the lens, as seen by the observer (camera). This ring is called the "Einstein ring." The other views of the image show small parts of the ring (b and h) or parts of the ring simultaneously observable on both sides (c, d, f, and g). As the distant star moves along behind the lens its image expands in the vertical direction as the section on the opposite side becomes visible, then both sides expand to become the complete circle. As the star recedes from behind the lens, the image system unwinds in the opposite direction.

Needless to say, it is unlikely that the distant star will pass *directly* behind the gravitational lens. You are now ready to move on to the next question Question #258: What happens when the star, the lens, and the observer do not become co-linear.

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For questions and comments regarding the *Question of the Week* contact
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given on the Lecture-Demonstration Home Page.