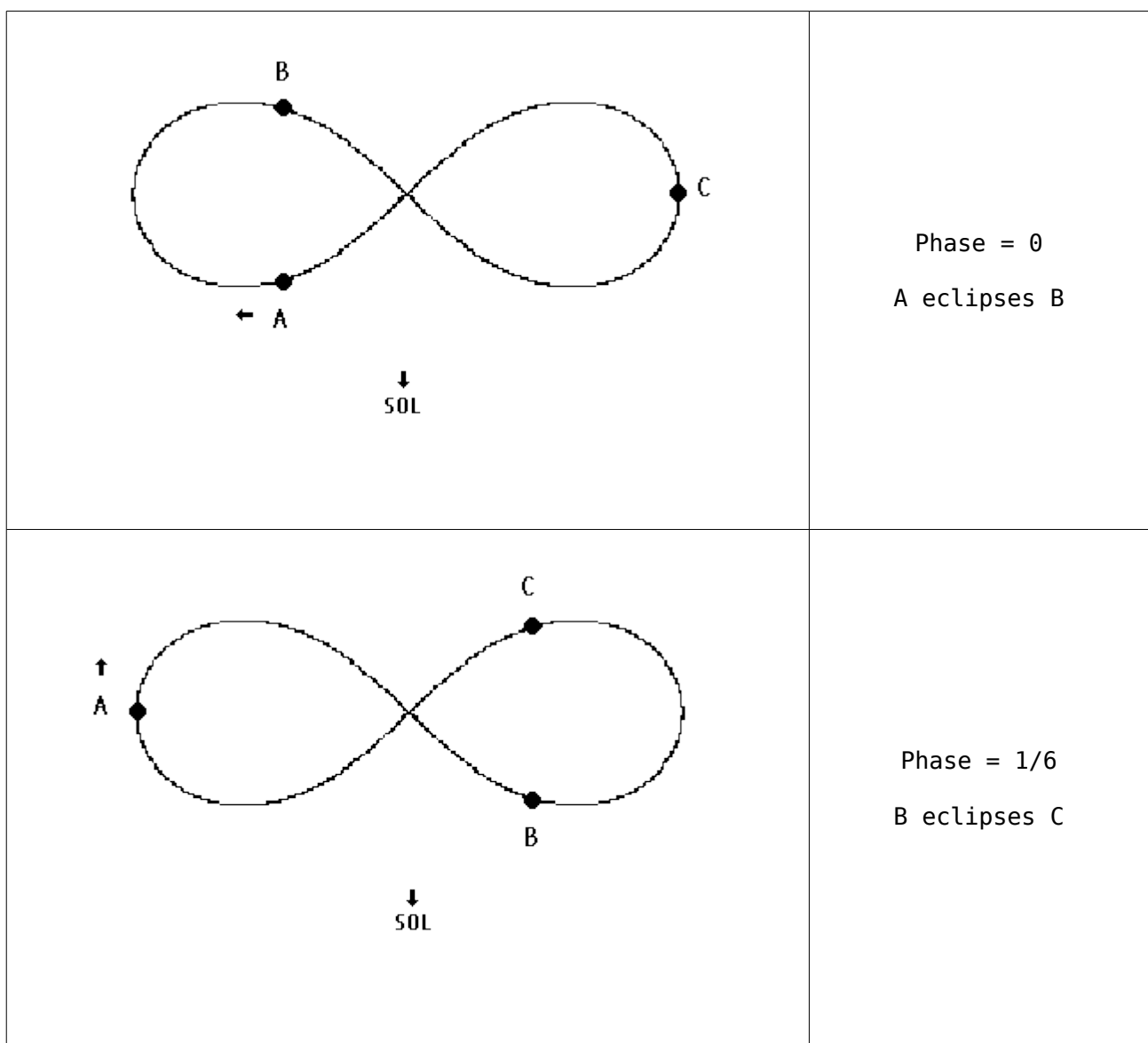


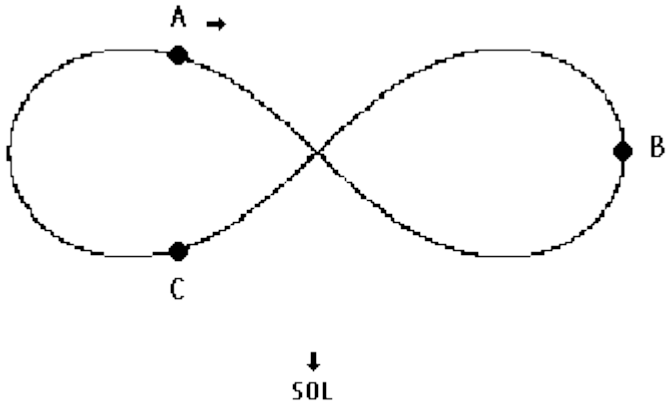
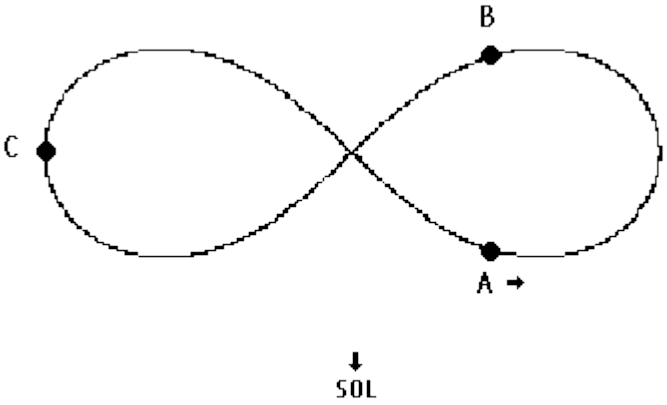
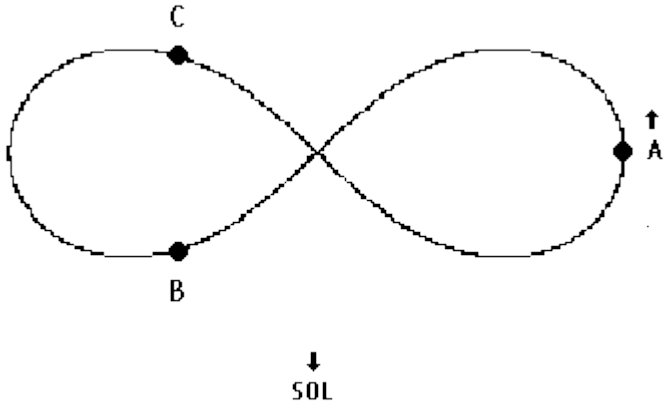
Computed light curve of a hypothetical eclipsing figure-eight triple star system

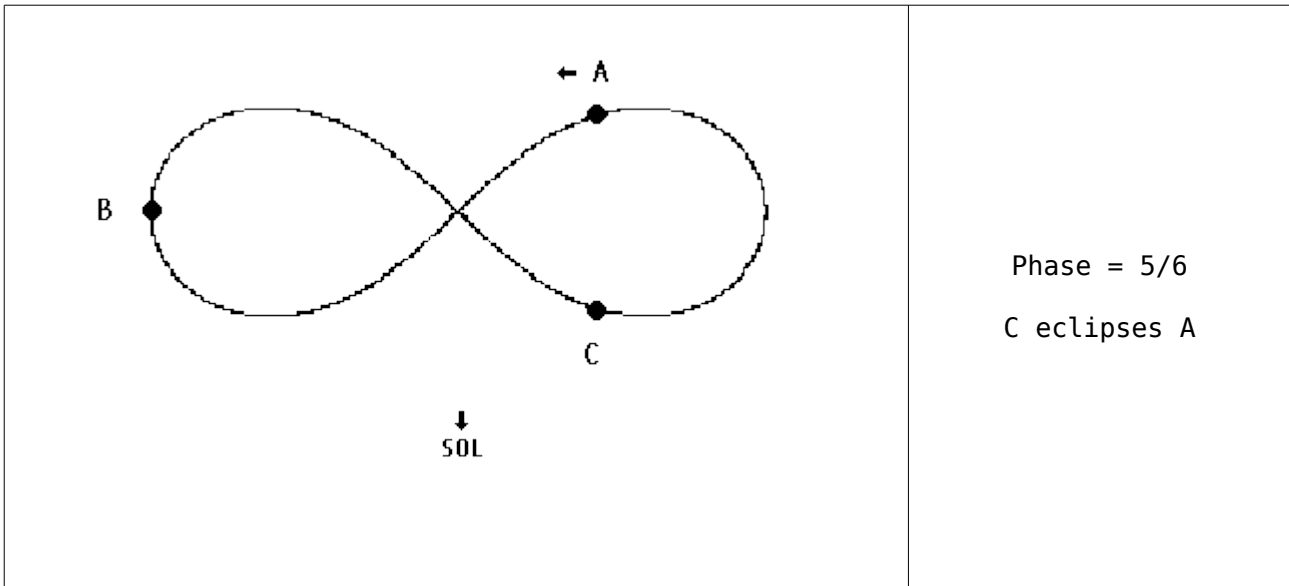
by S.Edgeworth

These six diagrams illustrate the eclipse cycle of a hypothetical figure-eight triple star system which is oriented with the major axis of the orbit perpendicular to the direction of the observer.

Figures 1-6. The sequence of eclipses



	<p>Phase = 2/6 C eclipses A</p>
	<p>Phase = 3/6 A eclipses B</p>
	<p>Phase = 4/6 B eclipses C</p>



So the sequence of eclipses per orbital period is:

- A eclipses B
- B eclipses C
- C eclipses A
- A eclipses B
- B eclipses C
- C eclipses A

It is noteworthy that:

- A never eclipses C
- B never eclipse A
- C never eclipses B

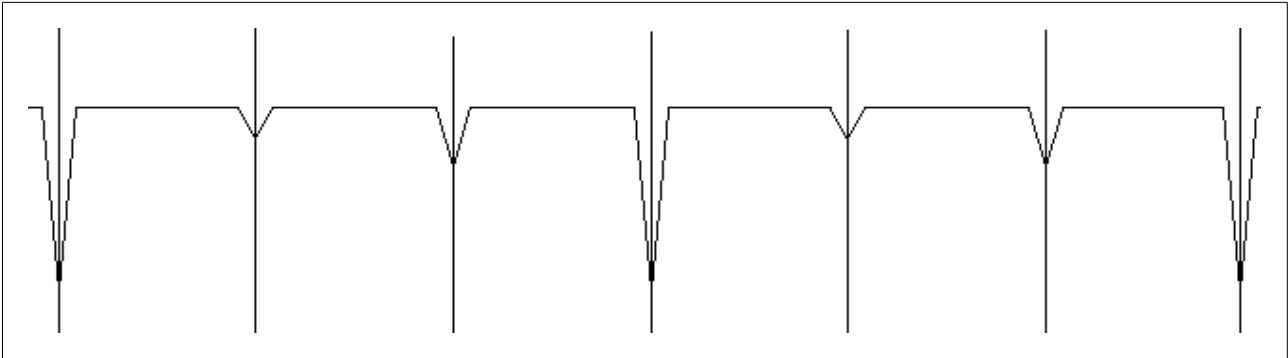
There are 6 eclipses per orbital period

- Eclipse 4 is identical to eclipse 1.
- Eclipse 5 is identical to eclipse 2.
- Eclipse 6 is identical to eclipse 3.

For the purpose of illustration, each of the three eclipse types is assigned an arbitrary duration, and an arbitrary amplitude as follows:

- A eclipses B = large amplitude
- B eclipses C = small amplitude
- C eclipses A = medium amplitude

Here is the light curve for one orbital period. (The eclipse shapes have for speed been drawn with angular shapes, in reality they would of course be curves). The vertical axis is brightness. The horizontal axis is time. The vertical lines are spaced at intervals of one sixth of an orbital period:

Figure 7: The computed light curve

The light curve for the first half of the orbital period is identical to the light curve for the second half of the orbital period.

So far only one particular orientation of the orbital major axis, relative to the direction to the observer, has been considered. It is intended to examine other orientations (some of which result in a sequence of 12 eclipses per orbital period) in another paper.

Conclusion

The light curve of a hypothetical eclipsing triple star system with a figure-eight orbit, at some angles of orientation of the orbital major axis relative to the observer, is predicted to have six eclipses per orbital period, of three amplitudes, in the sequence 1-2-3-1-2-3.

References

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