

Abstract Submitted
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By Parallax to the Moon: An exercise with online data CHARLES H. HOLBROW, Colgate Univ & MIT — On May 23, 2007 at 16:09:31 UTC, Peter Lawrence at Selsey, UK (50.73502° N, 0.78977° W), and Anthony Ayiomamitis at Athens, Greece ($37^\circ 59' 2.3''$ N, $23^\circ 43' 40.1''$ E), photographed the Moon as it passed close to the bright star Regulus (α -Leonis).¹ Their two pictures show the Moon at different angular separations from Regulus because of parallax of the Moon relative to this much more distant star. You can extract from the pictures the parallax angle of $1118''$ and use it to find the distance from Earth to Moon. However, you can not use the simplifying assumptions that are standard in astronomy texts because the triangle formed by the locations of Selsey, Athens, and the Moon is oblique; no two of its sides are equal; and it lies in a plane tilted relative to the horizontal planes of the observers in a way not easy to visualize. I will show how a student can set up the problem in terms of vectors, evade difficulties of three dimensional visualization, and obtain a value of the Earth-Moon distance on that day and at that time of $373,000 \pm 4,000$ km in good agreement with its actual value.

¹<http://www.etwright.org/astro/moonpar.html>

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