PARALLAX-ABERRATION IS GEOCENTRIC — REVISITED

James Hanson

In an article on the same subject in a previous issue,[1] I showed how parallax and aberration are not separate effects proving Copernicanism, but instead, are indistinguishable and a property of the space between the earth and an observed star. Specifically, I derived the observed parallax-aberration by assuming space as an ideal fluid and by representing the earth as a sink, a star as a source, and the sun as a doublet (source + sink) - vortex. In this article I will derive (justify) the same result by assuming space is an optically refractive medium obeying Fermat's principle. In either article I do not claim my model actually describes nature (space), but only that one can rational-mechanically obtain the accepted observed results in a geocentric model. The motivation is that geocentricity is the correct cosmology since this is the one that the Bible teaches. In either of my models, space (firmament) is governed by the position of the sun in it. The sun was created to type the LORD Jesus, ruling wherever it shines (Gen 1:14, Ps 19:1-6). Hence we expect it to effect all space since "by him all things consist" (Col 1:16-17). The Sun (Son) comes for us (Mal 4:2), i.e. the Sun (Son) does the moving.

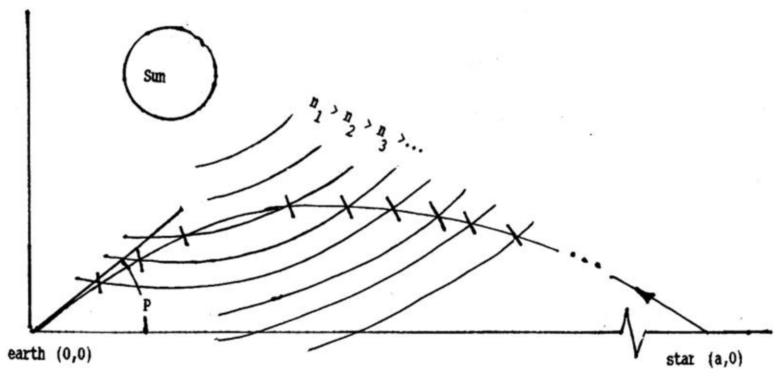
By considering space as an optically refractive medium, we wish to assign space's index of refraction whereby light leaving a star follows a curved path so that it arrives with a prescribed angle (deflection) from the star's direction. This required angle, P, is the sum of parallax and aberration plus other possible effects. Fermat's principle is the expression of Snell's law for continuous media. The below figure shows how star light would be deflected (refracted) as it reaches the earth, where

$$n_1 > n_2 > n_3 > \ldots$$

are the indices of refraction of shells of space, whose time position depends on the location of the sun.

---

[1] Hanson, J., 2005. "Stellar Parallax-aberration is Geocentric," *B.A.*, **15**(113):77.



Perpendiculars to each shell interface are shown in order to demonstrate the employment of Snell's law,

$$n_i \sin(\text{entrance\_angle\_to\_shell}_i) = n_{i+1} \sin(\text{exit\_angle\_to\_shell}_i) .$$

Fermat's principle for this problem may be expressed as minimizing the following integral over paths $y(x)$, i. e.

$$\min_{y(x)} \int_{x=0}^{x=a} \mathrm{n}(x, y(x))\, \mathrm{d}s$$

where ds is a differential of arc-length along $y(x)$. Let I represent the integrand, then

$$\mathrm{I}(x, y, y') = \mathrm{n}(x, y) \left[((\mathrm{d}x)^2 + (\mathrm{d}y)^2)/(\mathrm{d}x)^2 \right]^{1/2} \mathrm{d}x$$

$$= \mathrm{n}(x, y)\, (1 + y'^2)\, \mathrm{d}x$$

where $y' = \mathrm{d}y/\mathrm{d}x$. The necessary condition for optimality is the Euler-Lagrange equation (∂ indicating partial differentiation),

$$\partial I/\partial y - (d/\mathrm{d}x)(\partial I/\partial y') = 0$$

which on expansion and then solving for y'' gives

$$y'' = \left[(1 + y'^2)^2 \mathrm{n}_y - (\mathrm{n}_x + \mathrm{n}_y y')\, y' (1 + y'^2) \right]/\mathrm{n}$$

where

$$n_x = \partial n/\partial x, \quad n_y = \partial n/\partial y.$$

In order to simplify we will assume that $y'^2 << 1$ and n is very close to one. Thus

$$y'' = n_y - (n_x + n_y\ y')y'$$

We will obtain an approximate solution for this differential equation and then choose n(x, y) such that P = $y'(0,0)$. A Taylor series approximation retaining the quadratic term will be employed where the boundary conditions $y(0)=y(a)=0$ are imposed. Expanding about $x=a$ gives,

$$y(x) = y(a) + y'(a)(x-a) + 0.5y''(a)(x-a)$$

$$= 0 + z(x-a) + 0.5[B - (A -Bz)\ z]\ (x-a)$$

where

$$z = y'(a), \quad A = n_x\ [a, y(a)] = n_x\ (a, 0), \quad B = n_y\ (a, y(a)) = n_y\ (a,0)$$

Next, invoke the condition $y(0)=0$ by setting $x=0$,

$$0 = -az + 0.5a^2\ [B -(A + Bz)z]$$

or

$$0.5aBz^2 + (0.5aA - 1)z - 0.5aB = 0$$

But for our parabolic approximation, $-z$ approximates P and $|P| << 1$. Then we may ignore the z^2 term as being small compared to the other terms. Assume that in the neighborhood of the star, gradients A and B satisfy A > 0 and B = -A,

$$z = 0.5aB /(0.5aA -1) - 0.5\ aA.$$

We may now compute $P = y'(0)$,

$$P = y'(0) = z + [B - (A + Bz)z](-a)$$

$$= -0.5aA + aA\ = 0.5aA.$$

Let the accepted time value of P be denoted by $f(t)$, then we have solved our problem by setting

$$A = 2f(t)/a.$$

For example, in the parallax-aberration case set

$$f(t)=C_p \sin(2\pi\, t) + C_a \cos(2\pi\, t)$$

where the C_p and C_a are the coefficients of parallax (possibly dependent on a) and the constant of aberration. To $f(t)$ one might additively append additional terms having the form $C\sin(pt+q)$, where, for example, in the case of the barycentric aberration, or parallax, due to the moon's motion, p is the synoptic frequency with respect to the sun and q the angle (longitude) of conjunction. A term for the mechanical effects of Jupiter, Venus and other causes could be incorporated into our geocentric model. We do not necessarily deny the existence of these effects, but insist that they are compatible with a geocentric cosmos. This situation is contrived and approximations somewhat arbitrary. However, I have also preformed a more thorough and accurate solution of our variational equation, but with much more mathematical complexity. This solution depends on $n(x, y)$ along it's entire path and not just in the neighborhood of the star. But it adds little to our feasibility study. From these two studies one could suspect that by attributing a viscosity to space, the solution of the Navier-Stokes equation[2] would yield a similar justification for geocentricity, or for that matter, any diffusion process might be used.

Quotable Quote

Even in the sixteenth and seventeenth centuries, the leading scientific figures were overwhelmingly devout Christians who believed it their duty to comprehend God's handiwork. My studies show that the "Enlightenment" was conceived initially as a propaganda ploy by militant atheists attempting to claim credit for the rise of science. The falsehood that science required the defeat of religion was proclaimed by self-appointed cheerleaders like Voltaire, Diderot, and Gibbon, who themselves played no part in the scientific enterprise—a pattern that continues today. I find that through the centuries (including right up to the present day), professional scientists have remained about as religious as the rest of the population—and far more religious than their academic colleagues in the arts and social sciences.

—Rodney Stark, "False Conflict: Christianity is not Only Compatible with Science—it Created it," *The American Enterprise*, Oct-Nov 2003.

[2] Navier-Stokes equations are the foundation of fluid mechanics. They are used to describe the flow of liquids. (—*Ed*.)