Aristarchus calculation of the "size" of the sun

Post by “Martin” of April 22, 2026 at 2:57 AM

For questions 2 and 3: Once you have established the law of gravity and measured the gravitational constant with a laboratory scale setup, you can calculate the product M/r^3 (M = mass of the sun, r = radius of the circle for an approximately circular path around the sun) from the measured time it takes the planet for one round around its sun. If there is another planet, you can determine its product M/r'^3. By measuring its apparent diameter at different positions relative to the own planet, calculations for consistency should reveal M, r and r'. Then, you can calculate the diameter of the sun from the apparent size with r. With no other planet, no moon and no comets passing by, classical mechanics seems to be at a dead-end with M/r^3. With the capability to launch satellites, a satellite can be used instead of the moon for the needed additional measurements. Or a space probe can be sent to collect the needed additional measurements. If the path around the sun is not exactly circular and the axes of the elliptical path are sufficiently different and with knowledge of the neutron and after measurement of its half-life, the measured neutron flux density from the sun during one round around the sun can be used to determine values for the main axes of the ellipse which are consistent with the measured flux densities at the points closest and farthest from the sun on the elliptical path.