

Meeting: 1003, Atlanta, Georgia, MAA CP E1, MAA Session on Mathematics in the Islamic World

1003-E1-218 **Glen R. Van Brummelen*** (gvanbrum@bennington.edu), Bennington College, Bennington, VT 05201. *Al-Samaw'al's Curious Approach to Trigonometry*. Preliminary report.

The 12th-century mathematician Ibn Yahya al-Maghribi al-Samaw'al, now better known for his algebra, also wrote the extensive treatise *Exposure of the Errors of the Astronomers*. This fascinating under-studied work, containing criticisms of a number of astronomers, provides an interesting study of debates over the proper practice of medieval astronomy. In particular, al-Samaw'al eschews any form of geometrical approximation, no matter how trivial. One of his objections is to the methods that had been used to determine the geometrically unattainable sine of one degree in Ptolemy's *Almagest* as well as in later Muslim works. To avoid this apparently unavoidable problem, al-Samaw'al presents an alternate trigonometric table that breaks the circle into 480 rather than 360 parts. We shall present the table as well as one of its uses in al-Samaw'al's work. (Received August 30, 2004)