1003-01-920 **Jan P Hogendijk*** (`hogend@math.uu.nl`), Department of Mathematics, Utrecht University, P.O. Box 80.010, 3508 TA Utrecht, Netherlands. *Hard mathematics in the medieval Islamic tradition: al-Mahani's treatise on ratio theory.*

In this talk I will discuss the treatise on ratio theory by the Iranian mathematician al-Mahani, who worked around AD 860 near Baghdad. This Arabic treatise has survived in what is probably a revised version, which has been published in 2002 by Bijan Vahabzadeh on the basis of six medieval manuscripts. Al-Mahani did not accept the definitions of equal and greater ratio that had been given by Euclid in Book 5 of the Elements. Al-Mahani presents alternative definitions based on the Greek process of anthyphairesis, which is related to modern continued fractions. He then proves the equivalence of his own definitions to Euclid's definitions of equal and greater ratio. I will attempt to restore some of al-Mahani's complicated proofs from the corrupt Arabic text (based on nine medieval manuscripts), with due attention to the methodological difficulties inherent in this type of restoration. (Received October 01, 2004)