

Seminar SAW
Seminar History and Philosophy of Mathematics – 2011-2016

February 9th, 2015

Mathematics, Astral science and Trigonometry

Philippe Abgrall (CEPERC, AMU–CNRS)

Ibn 'Irāq's use of the sine theorem to solve certain problems linked to the astrolabe

Abstract – In some of his treatises, Ibn 'Irāq (second half of the 10th century) deals with the astrolabe's construction or with some of its uses. The problem of constructing height circles (or azimuth circles), the great circles which are orthogonal to the horizon circle on the sphere, is integrated into treatises on the astrolabe only from the 9th century onwards. It is the most difficult problem when constructing an astrolabe. We shall examine some situations which Ibn 'Irāq solves by applying the sines' theorem, which he had elaborated in his works on spherical trigonometry. In another problem concerning the use of the astrolabe this time, Ibn 'Irāq will resort to this theorem to demonstrate al-Ṣaghānī's solution which was criticized by al-Harawī.