

SAW Seminar: **Mathematical practices in the context of the astral sciences**

April 11, 2014

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Numerical functions describing periodic astronomical phenomena in Mesopotamia

Abstract: The so-called ACT texts stem from the last 3 centuries BC. They are the result of a long development ending with a surprisingly elegant and efficient numerical description of lunar and planetary phenomena. The talk will present some early and late astronomical numerical functions and analyze their empirical basis. Various texts treating the following themes shall exemplify how periodic astronomical quantities were ascertained through the last millennium BC:

- Observations recorded in the Diaries
- Solar velocity: “Calendar texts” and column B in the lunar ACT texts. The irregular lunar calendar was approximated by a “schematic calendar” in which each month is taken to be 30 days long. This leads among others to the approximation that the sun moves 1° per day and to the Babylonian zodiac.
- Lunar latitude, traced by observations and approximated by numerical functions. One text reveals that the Babylonians used successive approximations.
- ACT functions approximating lunar velocity. Column Φ and friends.

Finally, if we have enough time:

- Mathematical and conceptual questions to the procedure calculating the duration of 1, 12, and 6 lunar months by means of two versions, R and S, of Φ .