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Approximate results and recursive algorithms in Greek astronomy

Abstract - From the Hellenistic period on, Greek astronomy began to operate with precise numerical parameters, especially periodicities, in modelling the phenomena and motions of the heavenly bodies. A conflict between two approaches can be seen. In one, it was assumed that true values of parameters can be expressed exactly in terms of whole numbers, often reflecting numerological patterns. In the case of periodicities, such an assumption implies the existence of long combined recurrence periods encompassing multiple periodicities, e.g. for all the planets at once. In the other approach, all values of parameters are understood as approximations. Ptolemy's adherence to this view is closely bound with his extensive use of recursive deductive arguments in the *Almagest*.