

SAW Conference

Mathematical Practices in relation to the Astral Sciences

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Mathematical Practices: Contrasts

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Understanding the vikala, Pṛthūdaka's interpretation of Brahmagupta's rules on quantities with sexagesimal parts

Abstract – In the mathematical chapter of the *Brāhmasphuṭassidhānta* (628), two rules evoke computations dealing with quantities which have sexagesimal parts. These rules are unique for what we know of Sanskrit mathematical texts. Pṛthūdaka (ca. 860), a commentator of Brahmagupta, provides his own peculiar interpretation of these rules that we will try to follow, providing a first-hand edition and translation of his commentary on them. He interprets the first rule, BSS.12.62, as an approximation of a square and he understands the second one, BSS.12.64–65, as a rule to approximate a square-root (of a difference or sum of squares including a quantity with a sexagesimal part). The way quantities with sexagesimal parts were shaped and operated upon will be discussed, slightly revising past interpretations concerning them. Along the way, how divisions were carried out, and how such quantities were used in a more astronomical context will be evoked.