

SAW Conference

Mathematical Practices in relation to the Astral Sciences

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Mathematical Reasonings 1

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Practical Trigonometry in Indian Astronomy

Abstract – Trigonometry came out of the practice of astronomy and they are inseparably linked to each other. It is true in the case of Indian astronomy.

In my speech, I will introduce examples of trigonometrical calculation showing how Indian astronomers solved problems on the celestial sphere without using any techniques of spherical trigonometry, nor even the concept of angle. I will mainly speak of the calculation of "drkksepa", which corresponds to the zenith distance of the midpoint of the ecliptic above the horizon, and a subtle way for calculating the sum of two sines which are not on the same plane. Both of them are mentioned by an Indian astronomer, Nilakantha, in his commentary on *Aryabhatiya* written in the 14–15th century.