

**IMPROVEMENT OF THE RULE OF ARYABHATA IN THE CASE  
OF DIFFERENCES BETWEEN TWO PROJECTIONS OF  
CONSECUTIVE ARC DIVISIONS**

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**Abstract:** In the present study we modify the value of differences between two projections of consecutive arc divisions mentioned in the work of A. A. Krishnaswami Ayyangar entitled “The Mathematics of Aryabhata”. With the help of circumference-diameter ratio of Aryabhata, we will obtain two more corrected values. Also we will obtain the result with modern circumference-diameter ratio. We can find error percentage in three cases 0.14338558 %, 0.000467054 % and 0.14291853 % respectively.

**Keywords and Phrases:** Aryabhata, Mathematics, Arc, Chord, Projection.

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### **1. Introduction**

A. A. Krishnaswami Ayyangar (1926) described the mathematics of Aryabhata in which he has given the rule of Aryabhata for the calculation of differences between two projections of consecutive arc divisions.

Let the quadrant  $AOB$  be formed by radii  $OA$ ,  $OB$  and the arc  $AB$ . Let the arc  $AB$  be divided into 24 equal parts such that each part consists  $3.75^\circ$ . Let us draw perpendiculars from three consecutive points of division arc  $AB$  on  $OB$ . Let this perpendicular are  $A_{n-1}B_{n-1}$ ,  $A_nB_n$  and  $A_{n+1}B_{n+1}$  respectively. Therefore projections of consecutive arc divisions are  $B_{n-1}B_n$  and  $A_nB_{n+1}$  respectively.