

**ZMATH 2010b.00434**

**Percy, Andrew; Rogers, D.G.**

**Alternative route: from van Schooten to Ptolemy.**

Normat. 57, No. 3, 116-128 (2009).

Summary: A cyclic quadrilateral is a polygon with four vertices, all of which lie on a circle. Such enjoy some special properties. It is well-known that the sum of opposite angles always add up to  $\pi$ , it is maybe less well-known that the rectangle formed by the diagonals has the same area as the sum of the rectangles made up by opposite sides. The latter is known as Ptolemy's theorem. It has many consequences, not only of trigonometric computations, but also of justifying the elegant solution of the Dutch mathematician van Schooten (1615–60) of constructing the minimal sum of distances from a point to the vertices of a triangle, a problem posed as a challenge by Fermat. The article gives a historical survey and indicates how van Schooten's construction could serve as an inspiration by 'cutting and pasting' to suggest and prove Ptolemy's theorem.

*Classification:* G40 A30

*Keywords:* Ptolemy's theorem; distance problems; historical survey; history of mathematics