School Science and Mathematics

An inequality involving a sum of squares

5371: *Proposed by José Luis Díaz-Barrero, BarcelonaTech, Barcelona, Spain.*

Let $a_1, a_2, \ldots, a_n$ be $n \geq 4$ positive real numbers. Prove that

$$\left(\frac{a_1}{a_n + a_2}\right)^2 + \left(\frac{a_2}{a_1 + a_3}\right)^2 + \ldots + \left(\frac{a_n}{a_{n-1} + a_1}\right)^2 \geq \frac{4}{n}$$

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