Year: 2017 | **Vol.: 90** | **Fasc.: 1-2**

Title: On inequalities for alternating trigonometric sums

Author(s): Horst Alzer and Man Kam Kwong

We present various inequalities for alternating trigonometric sums. Among others, we prove that the double-inequality

$$\frac{1-\sqrt{2}}{3} \leq \sum_{k=1}^{n} (-1)^{k-1} \, \frac{\sin^2((2k-1)x)}{2k-1} \leq 1$$

is valid for all natural numbers n and real numbers x. Both bounds are sharp.

Address:
Horst Alzer
Morsbacher Str. 10
51545 Waldbröl
Germany

Address:
Man Kam Kwong
Department of Applied
Mathematics
The Hong Kong
Polytechnic University
Hunghom
Hong Kong