

Zheng, Hui; Yang, Shichun**The positive integer solutions to multivariate Euler function equation** $\varphi(x_1x_2 \cdots x_n) = k_1\varphi(x_1) + k_2\varphi(x_2) + \cdots + k_n\varphi(x_n) \pm l$. (Chinese. English summary) [Zbl 07448803](#)[Math. Pract. Theory 51, No. 13, 313-318 \(2021\)](#)

Summary: Let $\varphi(n)$ be the Euler's function, we discussed the solvability of Euler function equation $\varphi(x_1x_2 \cdots x_n) = k_1\varphi(x_1) + k_2\varphi(x_2) + \cdots + k_n\varphi(x_n) \pm l$, and gave the more precise upper bound of all positive integer solutions to this equation with elementary method. As an application, we obtained all positive integer solutions to this equation when some positive integer sums as k_1, \cdots, k_n and l were given.

MSC:[11B68](#) Bernoulli and Euler numbers and polynomials[11D72](#) Diophantine equations in many variables**Keywords:**[Euler function; functional equation; positive integer solution; upper bound of solutions](#)