University of Colorado
Department of Mathematics
Problem of the Month
December 2021-January 2022

Let a_n be the least significant decimal digit of the sum

$$1^1 + 2^2 + 3^3 + 4^4 + \cdots + n^n.$$

Show that $a_n = a_{n+100}$ for any positive n.

(The "least significant decimal digits" of the numbers 512, 1776, 65537 are 2, 6, and 7, respectively. The least significant digit is the "rightmost digit".)