

## **(more) elementary evaluations of some K3 point-counts and periods**

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We give some examples within and outside number theory of problems that lead naturally to counting points on a K3 surface  $X$  over a finite field, or computing a period of  $X$  (the analogous question over  $\mathbb{R}$  or  $\mathbb{C}$ ). Often the Neron-Severi group  $NS(X)$  attains or comes close to the upper bound of 20 on its rank  $\rho$ . In this case the behavior of the point-counts and periods can be guessed from the lattice structure of  $NS(X)$ , but the usual proofs require very elaborate machinery even in the  $\rho=20$  case where the answers are simplest. In many cases we find a more elementary approach by explicitly identifying  $X$ , or a closely related K3 surface, with a surface (such as the Kummer surface of a product of elliptic curves) whose point-counts and periods can be computed directly.