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The h -vectors of arithmetically Gorenstein sets of points on a general sextic surface in \mathbb{P}^3

We give the possible h -vectors of arithmetically Gorenstein sets of points on a general sextic surface in \mathbb{P}^3 and show the existence of such a set for each possible h -vector. We also give some partial results for general surfaces of higher degree and for the possible graded Betti numbers of arithmetically Gorenstein sets of points on a general quintic surface. Our methods are centered on the vector bundle techniques developed by several people, notably Chiantini and Faenzi, together with extensive use of liaison theory.