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A classification of the Veldkamp lines of the near hexagon $L_3 \times \text{GQ}(2, 2)$

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Abstract: Using a standard technique sometimes (inaccurately) known as Burnside's Lemma, it is shown that the Veldkamp space of the near hexagon $L_3 \times \text{GQ}(2, 2)$ features 156 different types of lines. We also give an explicit description of each type of a line by listing the types of the three geometric hyperplanes it consists of and describing the properties of its core set, that is the subset of points of $L_3 \times \text{GQ}(2, 2)$ shared by the three geometric hyperplanes in question. .

Keywords: Near hexagons, Geometric hyperplanes, Veldkamp spaces.

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Klasifikacija Veldkampovih premic bližnjega heksagona $L_3 \times GQ(2, 2)$

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Povzetek: Z uporabo standardne tehnike, včasih (netočno) poimenovane Burnsideova lema, pokažemo, da ima Veldkampov prostor bližnjega šestkotnika $L_3 \times GQ(2, 2)$ 156 različnih vrst premic. Podamo tudi ekspliciten opis vsakega tipa premic na ta način, da podamo seznam tipov treh geometrijskih hiperravnin, iz katerih sestoji, in opišemo lastnosti njegove jedrne množice, to je podmnožice točk prostora $L_3 \times GQ(2, 2)$, skupnih ustreznim trem geometrijskim hiperravninam.

Ključne besede: Bližnji heksagoni, geometrijske hiperravnine, Veldkampovi prostori.

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