

Incidence structures near configurations of type $(n_3)^*$

Peter J. Dukes [†], Kaoruko Iwasaki

Mathematics and Statistics, University of Victoria, Victoria, Canada

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Abstract

An (n_3) configuration is an incidence structure equivalent to a linear hypergraph on n vertices which is both 3-regular and 3-uniform. We investigate a variant in which one constraint, say 3-regularity, is present, and we allow exactly one line to have size four, exactly one line to have size two, and all other lines to have size three. In particular, we study planar (Euclidean or projective) representations, settling the existence question and adapting Steinitz' theorem for this setting.

Keywords: Geometric configurations, incidence structures.

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[†]Corresponding author. Research supported by NSERC grant number 312595–2017.

E-mail addresses: dukes@uvic.ca (Peter J. Dukes), mphysics.f@gmail.com (Kaoruko Iwasaki)

Incidenčne strukture, ki se le malo razlikujejo od konfiguracij tipa $(n_3)^*$

Peter J. Dukes[†], Kaoruko Iwasaki

Mathematics and Statistics, University of Victoria, Victoria, Canada

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Povzetek

Konfiguracija (n_3) je incidenčna struktura, ekvivalentna linearnemu hipergrafu na n točkah, ki je tako 3-regularen kot tudi 3-uniformen. Raziskujemo različico te strukture, pri kateri je prisotna samo ena od teh dveh omejitev, na primer 3-regularnost, glede kratnosti premic pa velja, da so na eni premici štiri točke, na eni premici dve točki, na vseh ostalih premicah pa so po tri točke dane incidenčne strukture. Še posebej študiramo ravninske (bodisi evklidske bodisi projektivne) predstavitve ter razrešimo eksistenčno vprašanje in prilagodimo Steinitzev izrek za ta sestav.

Ključne besede: Geometrijska konfiguracija, incidenčne strukture.

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[†]Kontaktni avtor. Raziskava podprta s strani NSERC dotacije št. 312595–2017.

E-poštna naslova: dukes@uvic.ca (Peter J. Dukes), mphysics.f@gmail.com (Kaoruko Iwasaki)