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On line and pseudoline configurations and ball-quotients

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Abstract: In this note we show that there are no real configurations of $d \geq 4$ lines in the projective plane such that the associated Kummer covers of order 3^{d-1} are ball-quotients and there are no configurations of $d \geq 4$ lines such that the Kummer covers of order 4^{d-1} are ball-quotients. Moreover, we show that there exists only one configuration of real lines such that the associated Kummer cover of order 5^{d-1} is a ball-quotient. In the second part we consider the so-called topological (n_k) -configurations and we show, using Shnurnikov's inequality, that for $n < 27$ there do not exist (n_5) -configurations and for $n < 41$ there do not exist (n_6) -configurations.

Keywords: Line configurations, Hirzebruch inequality, Melchior inequality, Shnurnikov inequality, ball-quotients.

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O konfiguracijah premic in psevdopremic in krogelnih kvocientih

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Povzetek: Pokažemo, da ni realnih konfiguracij $d \geq 4$ premic v projektivni ravnini, katerih pridruženi Kummerjevi krovi reda 3^{d-1} so krogelni kvocienti, in da ne obstajajo konfiguracije $d \geq 4$ premic, katerih Kummerjevi krovi reda 4^{d-1} so krogelni kvocienti. Pokažemo tudi, da obstaja samo ena konfiguracija realnih premic, katere pridruženi Kummerjevi krovi reda 5^{d-1} so krogelni kvocienti. V drugem delu obravnavamo t.i. topološke (n_k) -konfiguracije in s pomočjo Shnurnikove neenakosti pokažemo, da za $n < 27$ ne obstajajo (n_5) -konfiguracije in da za $n < 41$ ne obstajajo (n_6) -konfiguracije.

Ključne besede: Konfiguracije premic, Hirzebruchova neenakost, Melchiorjeva neenakost, Shnurnikova neenakost, krogelni kvocienti.

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