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Enumeration of hypermaps of a given genus*

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Abstract: This paper addresses the enumeration of rooted and unrooted hypermaps of a given genus. For rooted hypermaps the enumeration method consists of considering the more general family of multirooted hypermaps, in which darts other than the root dart are distinguished. We give functional equations for the generating series counting multirooted hypermaps of a given genus by number of darts, vertices, edges, faces and the degrees of the vertices containing the distinguished darts. We solve these equations to get parametric expressions of the generating functions of rooted hypermaps of low genus. We also count unrooted hypermaps of given genus by number of darts, vertices, hyperedges and faces.

Keywords: Enumeration, surface, genus, rooted hypermap, unrooted hypermap.

Math. Subj. Class.: 05C30, 05A15

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Popis hiperzemljevidov danega rodu*

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Povzetek: Ta članek obravnava popis vkoreninjenih in nevkoreninjenih hiperzemljevidov danega rodu. Za vkoreninjene hiperzemljevide popisna metoda sestoji iz obravnavanja splošnejše družine večkorenskih hiperzemljevidov, v katerih razlikujemo med puščicami (loki), drugačnimi od korenske puščice. Podamo funkcijske enačbe za rodovne funkcije, ki štejejo večkorenske hiperzemljevide danega rodu s številom puščic, vozlišč, povezav, lic in stopenj vozlišč, ki vsebujejo razlikovalne puščice. Rešimo te enačbe in dobimo parametrične izražave rodovnih funkcij vkoreninjenih hiperzemljevidov nizkega rodu. Štejemo tudi nevkoreninjene hiperzemljevide danega rodu po številu puščic, vozlišč, hiperpovezav in lic.

Ključne besede: Popis (enumeracija), ploskev, rod, vkoreninjen hiperzemljevid, nevkoreninjen hiperzemljevid.

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