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Tajovskeho 40, 974 01 Banska Bystrica, Slovak Rep. *A recent progress in map enumeration.*

A map is a 2-cell embedding of a graph into a closed surface. Exact formula for the number of rooted edges of given genus is known for $g = 0$ (Tutte 1963), $g = 1$ (Arques 1987), $g = 2, 3$ (Bender and Canfield 1991), $g = 4$ (Giorgetti, Mednykh 2011). Giorgetti, Mednykh and Walsh have recently derived the enumeration formula's up to genus 10. In 1981 independently Liskovets and Wormald derived an enumeration formula for the number of isomorphism classes of spherical maps. In 2006 Mednykh and Nedela developed a general method for the enumeration of isoclasses of maps of fixed genus g . The method requires first to determine the numbers of rooted maps of all genera $\gamma \leq g$ as well as to determine all quotient surfaces of the surface S_g by all actions cyclic groups. Using this machinery the enumeration problem was solved first for genera $\gamma = 1, 2, 3$. Later Giorgetti, Mednykh and Walsh derived the enumeration formulas for genera g , where $4 \leq g \leq 10$. A similar method was successfully used by Breda, Mednykh and Nedela to solve the enumeration problem for the family of all maps and of reflexible maps. An asymptotic analysis of these sequences done by Drmota and Nedela shows that the number of reflexible maps takes about square root of the number of all maps. (Received September 13, 2011)