

Fedir M. Sokhatsky, Iryna V. Fryz

Invertibility criterion of composition of two multiary quasigroups

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Abstract: We study invertibility of operations that are composition of two operations of arbitrary arities. We find the criterion for quasigroups and specifications for T -quasigroups. For this purpose we introduce notions of perpendicularity of operations and hypercubes. They differ from the previously introduced notions of orthogonality of operations and hypercubes [Belyavskaya G., Mullen G.L., *Orthogonal hypercubes and n -ary operations*, Quasigroups Related Systems **13** (2005), no. 1, 73–86]. We establish some relationships between these notions and give illustrative examples.

Keywords: quasigroup, composition of operations, orthogonal operations, perpendicular operations, hypercube, perpendicular hypercubes, orthogonality of hypercubes, slice, linear quasigroup, T -quasigroup

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