Counting tolerances on chains

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A tolerance relation of a lattice L is a reflexive and symmetric relation compatible with the operations of L. It is clear that every congruence of a lattice L is a tolerance on L. A tolerance T of a lattice L is called a glued tolerance if its transitive closure T^* is the total relation L^2.

We give the number of all tolerances and all glued tolerances on an n-element chain. We also estimate the density of congruences and glued tolerances among all tolerances in case of chains.

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