
From generalized Tamari intervals to non-separable planar maps (extended abstract)

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Abstract

Let v be a grid path made of north and east steps. The lattice $TAM(v)$, based on all grid paths weakly above the grid path v sharing the same endpoints as v , was introduced by Prévaille-Ratelle and Viennot (2014) and

corresponds to the usual Tamari lattice in the case $v = (NE)_n$. They showed that $TAM(v)$ is isomorphic to the

dual of $TAM(\leftarrow v)$, where $\leftarrow v$ is the reverse of v with N and E exchanged. Our main contribution is a bijection from

intervals in $TAM(v)$ to non-separable planar maps. It follows that the number of intervals in $TAM(v)$ over all v of

length n is $2(3n+3)! / (n+2)!(2n+3)!$. This formula was first obtained by Tutte(1963) for non-separable planar maps.

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