Pretabular tense logics over S4t

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A logic L is called tabular if it is the logic for some finite algebra. A logic is called pretabular if it itself is not tabular while all of its proper consistent extensions are tabular. It is proved by Maksimova that there are exactly 3 pretabular superintuitionistic logics. It was shown by Maksimova and Esakia that there are exactly 5 pretabular modal logics in the lattice of normal extensions of S4. Moreover, Blok proved that the modal logic K4 has uncountably many pretabular extensions. However, the tense case is more involved and we know much less about it. Kracht introduced the pretabular tense logic Ga, whose frames have a maximum depth and width of 2 and do not contain any proper clusters. Rautenberg claimed that there are infinitely many pretabular extensions of S4t without providing a proof.

In this talk, we start with some basic results on pretabular modal logics over S4, and show some new results on pretabular tense logics in the lattice NExt(S4t). We start with the sublattice NExt(S4.3t), where S4.3t is the tense logic of chains. We show that there are exactly 5 pretabular tense logics extending S4.3t. Then we go to some larger sublattices of NExt(S4t), for example, tense logics extending the logics of of co-trees and zigzags. We'll prove that there are infinitely many pretabular tense logics over S4t. If time permits, we may also discuss our conjecture that there are uncountably many pretabular tense logics over S4t.