

- TATYANA IVANOVA AND TINKO TINCHEV, *First-order theory of lines in Euclidean plane*.

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The paper [1] gives qualitative spatial reasoning in Euclidean plane based solely on lines. The relations of parallelism and convergence between lines are considered.

In this talk we consider a continuation of [1] by adding a new predicate - perpendicularity. We introduce a first-order theory of lines in Euclidean plane with predicates parallelism, convergence and perpendicularity. The logic is complete with respect to the Euclidean plane,  $\omega$  - categorical and not categorical in every uncountable cardinality. We prove that the membership problem of the logic is PSPACE-complete.

[1] BALBIANI, P. AND TINCHEV, T., *Line-Based Affine Reasoning in Euclidean Plane*, *Journal of Applied Logic*, vol. 5 (2007), no. 3, pp. 421–434.