

Dependence spaces

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According to F. Gécseg, H. Jürgensen *Algebras with dimension*, Alg. Universalis, **30** (1993) 422–446. the result which is usually referred to as the "Exchange Lemma", states that for transitive dependence, every independent set can be extended to form a basis. Our aim is to discuss some interplay between the discussed notion of several authors. We presented another proof of the result of N.J.S. Hughes *Steinitz' Exchange Theorem for Infinite Bases*, Compositio Mathematica, tome 15, 1962–1964, p. 113–118 on Steinitz' exchange theorem for infinite bases in connection with the notions of transitive dependence, independence and dimension as introduced or example by Cohn P.M., *Univ. Algebra*, Harper and Row, New York, 1965. Revised edition, D. Reidel Publishing Co., Dordrecht, 1981 or Welsh, D.J.A., *Matroid Theory*, Academic Press, London, 1976. In the proof we assumed Kuratowski-Zorn's Lemma, as a requirement pointed originally. This is a continuation of my lecture presented on 77th Workshop on General Algebra, 24th Conference for Young Algebraists in Potsdam (Germany) on 21st March 2009 and continued on the seminar of IM PAN, Warsaw. Our aim is to discuss some problems connected with the subject.

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