

A NOTE ON HYPERVECTOR SPACES

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Abstract

The main aim of this paper is to generalize the concept of vector space by the hyperstructure. We generalize some definitions such as hypersubspaces, linear combination, Hamel basis, linearly dependence and linearly independence. A few important results like deletion theorem, extension theorem, dimension theorem have been established in this hypervector space.

Keywords: hyperoperation, hyperfield, hypervector spaces, linear dependent, linear independent.

2010 Mathematics Subject Classification: 14L17, 20N20.

REFERENCES

- [1] M. Krasner, *A class of hyperrings and hyperfields*, Intern. J. Math. and Math. Sci. **6** (2) (1983), 307–312. doi:10.1155/S0161171283000265

- [2] F. Marty, *Role de la notion d'hypergroupe dans l'étude des groupes non abéliens*, Comptes Rendus Acad. Sci. Paris Math. **201** (1935), 636–638.
- [3] F. Marty, *Sur les groupes et hypergroupes attachés à une fraction rationnelle*, Ann. Sci. de l'Ecole Norm. Sup. **53** (3) (1936), 82–123.
- [4] F. Marty, *Sur une généralisation de la notion de groupe.*, in: pages 45–49, “8^{ème} congrès des Mathématiciens Scandinaves”, Stockholm 1934.
- [5] A. Nakassis, *Expository and survey article recent results in hyperring and hyperfield theory*, J. Math. and Math. Sci. **11** (2) (1988), 209–220. doi:10.1155/S0161171288000250
- [6] P. Raja and S.M. Vaezpour, *Normed Hypervector spaces*, Iranian Journal of Mathematical Sciences and Informatics **2** (2007), 35–44.
- [7] M.K. Sen, *Utpal Dasgupta, Hypersemiring*, Bull. Cal. Math. Soc. **100** (2) (2008), 143–156.
- [8] M.S. Tallini, *A-ipermoduli e spazi ipervettoriali*, Rivista di Mat. Pura e Applicata, Università di Udine **3** (1988), 1–46.
- [9] M.S. Tallini, *Hypervector spaces*, Fourth Int. Congress on AHA, Xanthi, Greece (1990), 167–174.
- [10] M.S. Tallini, *Spazi ipervettoriali fortemente distributivi a sinistra*, Rend. Mat. Univ. Roma La Sapienza **11** (VII) (1991), 1–16.
- [11] M.S. Tallini, *Matroidal Hypervector spaces*, Journal of Geometry **42** (1991), 132–140. doi:10.1007/BF01231873
- [12] M.S. Tallini, *La categoria degli spazi ipervettoriali*, Quaderni Sem. Geom. Comb. Dip. Mat. “G. Castelnuovo” Univ. Di Roma La Sapienza, **110** (1993), 1–17.
- [13] M.S. Tallini, *Spazi ipervettoriali deboli e norme in tali spazi*. Quaderni Sem. Geom. Comb. Dip. Mat. “G. Castelnuovo”, Univ. Di Roma La Sapienza, **111** (1993), 1–14.
- [14] M.S. Tallini, *La categoria degli spazi ipervettoriali*, Rivista di Mat. Pura e Applicata, Univ. di Udine, **15** (1994), 97–109.
- [15] M.S. Tallini, *Weak hypervector spaces and norms in such spaces*, Proc. Int. Congress Algebraic Hyperstructures and Applications, Iasi, Romania, Luglio 1993, Hadronic Press, Palm Harbor, Florida (U.S.A.) (1994), 109–206.
- [16] M.S. Tallini, *Characterization of Remarkable Hypervector spaces*, Proc. of 8th int. Congress on Algebraic Hyperstructures and Applications, Samotraki, Greece, Sept. 1–9 2002, Spanidis Press, Xanthi, Greece, ISBN 960-87499-5-6 (2003), 231–237.

Received 23 March 2010
Revised 9 September 2010