On Krasner-Vuković's paragraded structures and some open questions

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Abstract

Graded structures (groups, rings, modules) represent an important theory and play significant role in many branches of mathematics and physics. Paragraded structures were introduced first to generalize classical graded structures and second, more important, to solve a problem of closure of graded structures with respect to the direct sum and direct product [M. Krasner, M. Vuković: *Structures paragradues* (*groupes, anneaux, modules*), Queen's Papers in pure and applied Mathematics, No. 77, Queen's University, Kingston, Canada, 1987, pp.163.].

At present, we will give some results concerning the paragraded structure sheaves which in some way introduce the theory of paragraded structures into algebraic geometry. Besides, some open questions will be presented, such as:

– examples of para- and extra- graded structures and their applications;

– examples of graded structures in algebra and modular theory;

– relations with algebraic geometry (direct image, inverse image);

– sheaves of paragraded modules, End and Hom;

– graded algebra of p-adic modular form;

– paragraded and profinite groups.

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