- <u>**Section number**</u>
- **02. Algebra. Number Theory**
- <u>**Name and Affiliation of author**</u> <u>**indication a return e-mail address**</u>

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* **Title of the poster:** ***Generalitie about paragraded structures and open questions.***

* <u>**Abstract:**</u>

The main new concept introduced in common papers and monograph of Marc Krasner and myself [2] was the notion of an extra- and para- graduation, as well as the structures (groups, rings, modules) called (extra-) para- graded. These structures generalise corresponding classic graded structures, as it exposed in Bourbaki as well as some earlier results of M. Krasner (see [1]), and have the closure property with respect to direct or cartesian composition in the sense that the support of the homogeneous subset of the composition (direct or cartesian) is the restricted direct or cartesian product of the components.
First as a generalization of the graduation we will introduce a new concept of para-gradution of the group G. It is a certain mapping **E:** $\Delta \rightarrow Sg(A)$ of partially ordered set $(\Delta, <)$, which is from bellow complete semi-lattice and from beyond inductive ly ordered, to the set Sg(G) of subgroups of the group G, which satisfies the following six-axiom system:

I $E.0=G_0=\{e\}$; If $\delta<\delta'$, then $G_\delta \subseteq G_{\delta'}$; 0 is the smallest element of Δ.

<u>Remark:</u>
r1. $H=\cup G_\delta$ is called the homogeneous part of the group G with respect to E, and elements $\delta \in \Delta$ are called homogeneous elements of G.

II If $\theta \subseteq \Delta$, then $\cap G_\delta = G_{\inf[\theta]}$.

III If $x, y \in H$ and $yx=zxy$, then $z \in H$ and $\delta(z) \leq \inf[\{\delta(x), \delta(y)\}]$.

<u>Remark:</u>
$z=yxy^{-1}x^{-1}$ is a <u>commutator</u> (y,x) of the elements y and x, more precisely denoted by $z(x,y)$.

IV Homogeneous part H is a generating set of G.

V If $A \subseteq H$ is a subset of H such that, for every $x, y \in A$ there exists the common majorant of the elements $\{\delta(x), \delta(y)\}$, then there exists a common majorant for all $\delta(x) \in A$.

VI Let $\delta_1, \delta_2, \ldots \delta_s \in \Delta_p$ be incomparable in pairs and let $x_i, x_i' \in H$ $(i=1,2,\ldots s)$ be such that $x_1 x_2 \ldots x_s = x_1' x_2' \ldots x_s'$ and $x_i, x_i' \in G_\delta$ for all $i=1,2,\ldots,s$, then $\delta(x_i^{-1} x_i') < \delta_i$.

[**1**] <u>**M.Krasner**</u> Anneaux gradués génêrqux, Colloque d'algèbre, Univ. Rennes 1 (1980), 209-308.

[2] <u>**M.Krasner**</u> et <u>**M.Vuković,**</u> Structures paragraduées, (groupes, anneaux, modules), Queen's Papers in pure and Applied mathematics, No. 77, Queen's University, Kingston, Ontario, Canada (1987), p.163.