

# Seminarium geometrów

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## Solubility Graph of Groups

Abstract: An emerging perspective in finite group theory involves the use of graphs to encode and analyze algebraic properties. One such type of graph is defined as follows: given a subgroup-closed class of finite groups  $C$  (for example, the class of abelian groups, nilpotent groups or solvable groups) and a finite group  $G$ , we define a graph whose vertices are the elements of  $G$  and where two vertices  $x$  and  $y$  are joined by an edge if the subgroup generated by  $x$  and  $y$  belongs to  $C$ . In the case where  $C$  is the class of solvable groups, this graph is called the solubility graph and its vertex neighborhoods are called solvabilizers. In this talk, I will present several results on the global combinatorial properties of solubility graphs as well as results that demonstrate the dramatic consequences that the quantitative and structural properties of solvabilizers can have on the algebraic structure of the group.

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