"Group Theory International" Online Seminar

Volker Diekert

(Universität Stuttgart, Germany)

"Log-space computations in graph products"

Thursday, Apr 11, noon (New York Time)

Abstract:

There is an increasing interest to connect algorithmic problems in group theory with small complexity classes. A prominent example is the class of log-space computable functions. Functions in this class can be solved sequentially in logarithmic space on a Turing machine and in parallel by Boolean circuits with polynomially many gates and $\log^2$-depth. For example, the word problem of f.g. free groups is solvable in log-space as this is true for all f.g. generated linear groups.

In the seminar I will report on a joint work with Jonathan Kausch and Armin Weiss that certain natural problems are robust under taking graph products in terms of log-space computability. This concerns the word problem, the conjugacy problem, and the problem to compute shortlex normal forms. The reduction from graph products to the corresponding problems in the vertex groups relies on Bass-Serre theory.

Next presentation: Apr 25, TBA

Algebraic Cryptography Center