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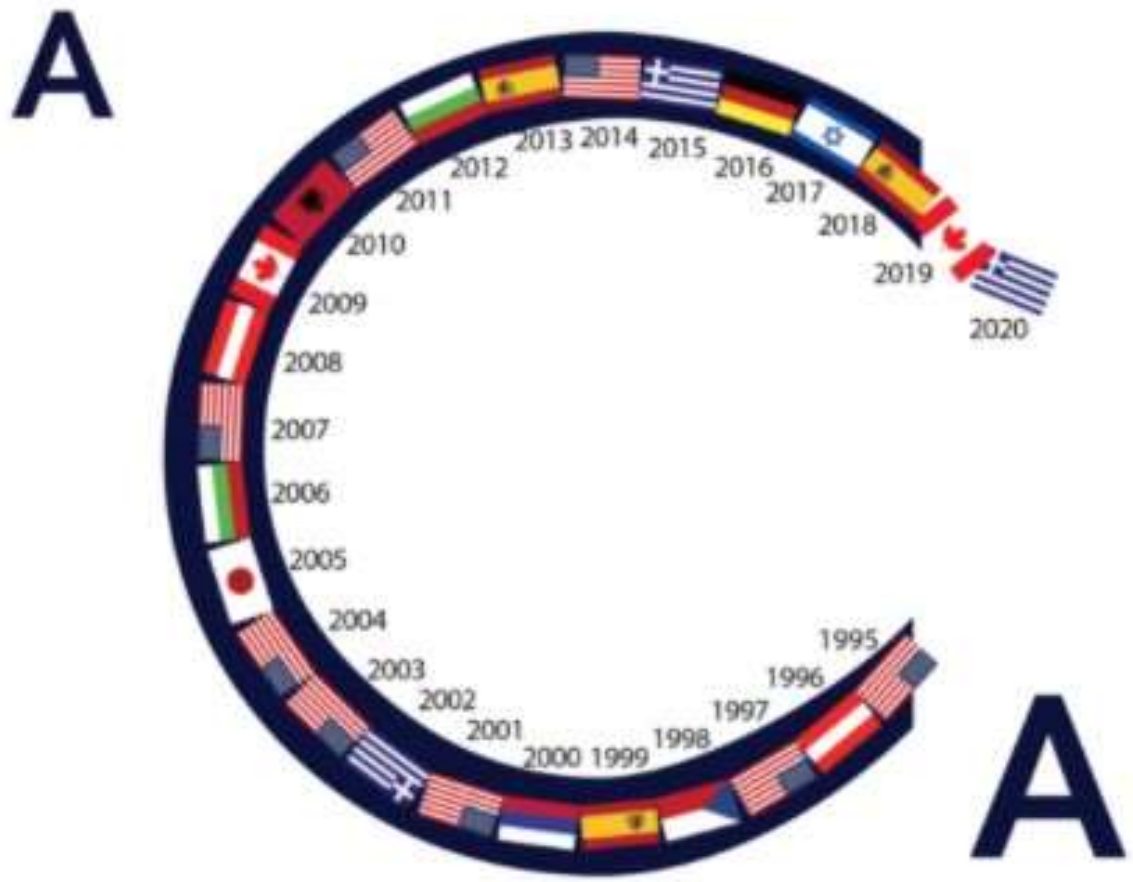

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Session on *Symbolic and Exact Linear Algebra over Rings and Fields*

Coppersmith's block Wiedemann method for polynomial problems

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Coppersmith has introduced a block version of Wiedemann's algorithm [1,11]. The method allows to obtain algorithms with best known complexity bounds for various matrix and polynomial problems. We can mention for example:

- Determinant of a matrix over a ring [5];
- Sparse linear systems and inversion of sparse matrices [4, 2, 8];
- Annihilating polynomials of structured matrices [6];
- Resultant of bivariate polynomials [10];
- Fast modular composition of univariate polynomials [7];
- Manipulation of zero-dimensional ideals [3].

We will review the general approach and discuss new improvement for the resultant problem, using a combination of techniques for structured matrices and high-order lifting [9].

Keywords
Coppersmith's block Wiedemann algorithm, resultant of polynomials, structured matrices

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