Computational Complexity Of Solving Equation Systems Springerbriefs In Philosophy

Computational Complexity Of Solving Equation
This volume considers the computational complexity of determining whether a system of equations over a fixed algebra A has a solution. It examines in detail the two problems this leads to: SysTermSat(A) and SysPolSat(A), in which equations are built out of terms or polynomials, respectively. The

Computational Complexity of Solving Equation Systems ...
In this paper we investigate the computational complexity of solving ordinary differential equations (ODEs) y ′ = p (y) over unbounded time domains, where p is a vector of polynomials. Contrarily to the bounded (compact) time case, this problem has not been well-studied, apparently due to the "intuition" that it can always be reduced to the bounded case by using rescaling techniques.

Computational complexity of solving polynomial ...
Abstract. The computational complexity of the solution h to the ordinary differential equation h(0) = 0, h′(t) = g(t, h(t)) under various assumptions on the function g has been investigated in hope of understanding the intrinsic hardness of solving the equation numerically. Kawamura showed in 2010 that the solution h can be PSPACE-hard even if g is assumed to be Lipschitz continuous and ...

Computational Complexity of Smooth Differential Equations ...
3.4 Computational Complexity of Linear Systems. As was mentioned in Section 3.1, the decomposition algorithm for solving linear equations is motivated by the computational inefficiency of matrix inversion. Inverting a dense matrix A requires 2 ...

3.4 Computational Complexity of Linear Systems‣ 3 Linear ...
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Actual computational complexity of solving a linear system ...
We study the computational complexity of solving systems of equations over a finite group. An equation over a group G is an expression of the form w 1 ·w 2 ·...·w k =1 G, where each w i is either a variable, an inverted variable, or a group constant and 1 G is the identity element of G.A solution to such an equation is an assignment of the variables (to values in G) which realizes the equality.

The Complexity of Solving Equations over Finite Groups ...
I have a linear equation. Ax=b where A is non-singular matrix N×N, and x,b are vector N×1; A,b are given and I want to find x. It is clear that x can be found by x=A^(−1)*b. I would like to measure the computational complexity when N increasing.. In MATLAB, I used the code x=A\b.

algorithm - Measure computational complexity of solving a ...
It is also necessary to solve the Poisson equation for the pressure, wich rapresent the most slow calcuus process. I wish to know wich is the dependence of the computational complexity from the number of cells in the domain (N^2,NlogN?) Thanks

Computational complexity of Navier Stokes equations -- CFD ...
The computational time of solving linear equations or inverting matrices has the same identical power law by using the decomposition. This puzzles me. I am wondering if the two problems are essentially equivalent in the end. $\endgroup$ – Alberto Montina Dec 8 '15 at 15:46

Complexity of linear solvers vs matrix inversion ...
My goal is to determine the overall computational complexity of the algorithm. Above, ... Computational complexity of solving Sylvester equation. 4. Most effective algorithms for each step of the basic RSA-Algorithm. Hot Network Questions On which hinge(s) ...

algorithms - Computational complexity of least square ...
What is the computational complexity of solving large system of linear equations using direct methods and minimum residual method? Direct methods such as Gauss elimination methods. Matrix is ...

What is the computational complexity of solving large ...
Cramer's rule implemented in a naïve way is computationally inefficient for systems of more than two or three equations. In the case of n equations in n unknowns, it requires computation of n + 1 determinants, while Gaussian elimination produces the result with the same computational complexity as the computation of a single determinant.

Cramer's rule - Wikipedia
Computational complexity theory focuses on classifying computational problems according to their resource usage, and relating these classes to each other. A computational problem is a task solved by a computer. A computation problem is solvable by mechanical application of mathematical steps, such as an algorithm.. A problem is regarded as inherently difficult if its solution requires ...

Computational complexity theory - Wikipedia
Computational complexity measures the amount of computational resources, such as time and space, that are needed to compute a function. In the 1930s many models of computation were invented, including Church's λ-calculus (cf. λ-calculus), Gödel's recursive functions, Markov algorithms (cf. also Algorithm) and Turing machines (cf. also Turing machine).

Computational complexity classes - Encyclopedia of Mathematics
equations depending on the number of digits of accuracy requested. A recent result showed that the cost of solving initial value problems (IVP) for ordinary difierential equations (ODE) is polynomial in the number of digits of accuracy. This improves on the classical result of information-based complexity, which predicts exponential cost.

COMPUTATIONAL COMPLEXITY OF NUMERICAL ... - math.ryerson.ca
We pursue this goal from the refined perspective of computational complexity. Specifically, we establish that rigorously solving the Dirichlet Problem for Poisson's Equation is in a precise sense 'complete' for the complexity class ${\#\mathcal{P}}$ and thus as hard or easy as parametric Riemann integration (Friedman 1984; Ko 1991.

On the computational complexity of the Dirichlet Problem ...
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reference request - Complexity of solving $\sum_i A_i X B ...
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Complexity of solving systems of linear equations with hash preimages Hot Network Questions Is "closed" an adverb or adjective in "pinch your nose closed"?