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Jesus A De Loera, Sonja Petrovic and Despina Stasi*, Applied Mathematics Department, Illinois Institute of Technology, 10 West 32nd Street, Chicago, IL 60616. *Random sampling in computational algebra: Helly numbers and violator spaces.*

We transfer a randomized algorithm, originally used in geometric optimization, to computational problems in commutative algebra. We show that Clarkson's sampling algorithm can be applied to two problems in computational algebra. The cornerstone of our work is showing that the theory of violator spaces of Gärtner et al applies to polynomial ideal problems. (Received August 30, 2016)