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**Marcus Michelen\*** (michelen.math@gmail.com) and **Will Perkins**. *Analyticity for classical gasses via recursion.*

Classical gasses are a central object of study in statistical mechanics. We will describe analogies between these continuous objects and more familiar discrete random models such as the hardcore model. For the case of repulsive pair potentials, we give a new criterion for uniqueness of the infinite volume Gibbs measure and analyticity of the pressure. Our improvement on the bound for analyticity is by a factor  $e^2$  over the classical cluster expansion approach and a factor  $e$  over the known limit of cluster expansion convergence. Based on joint work with Will Perkins. (Received August 12, 2020)