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*Simulated Annealing for the Calculation of Steady States*

Two simulated annealing approaches based on geometric/Hamiltonian structure will be described. The first [G. Flierl et al., "Jovian Vortices and Jets," arXiv:1809.08671] uses a combination Dirac constraint theory and double brackets, while the second [C. Bressan et al., "Relaxation to Magnetohydrodynamics Equilibria via Collision Brackets", arXiv:1809.03949] uses metriplectic dynamics. The methods along with various fluid and plasma steady states, steady states of physical relevance, will be described.