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Christoph Kattmann, 2022-09-13 Power flow computations are a cornerstone of many simulations regarding the electric grid This thesis evaluates the landscape of power flow computation methods with a focus on practical computational performance in large scale simulations as they occur in modern distribution grid planning The investigation involves various model assumptions different algorithms implementation details and unconventional computational optimization methods As a result the implementations devised in this thesis are up to a thousand times faster for large scale grid simulations than established solutions

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