

Resource-efficient parameter tuning of AMG-based preconditioners

Joint work with
Andreas Thune, Alf Birger Rustad,
Tor Skeie and Xing Cai

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What are we going to talk about?

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AMG and CPR preconditioners

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Parameter tuning

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Results for Norne

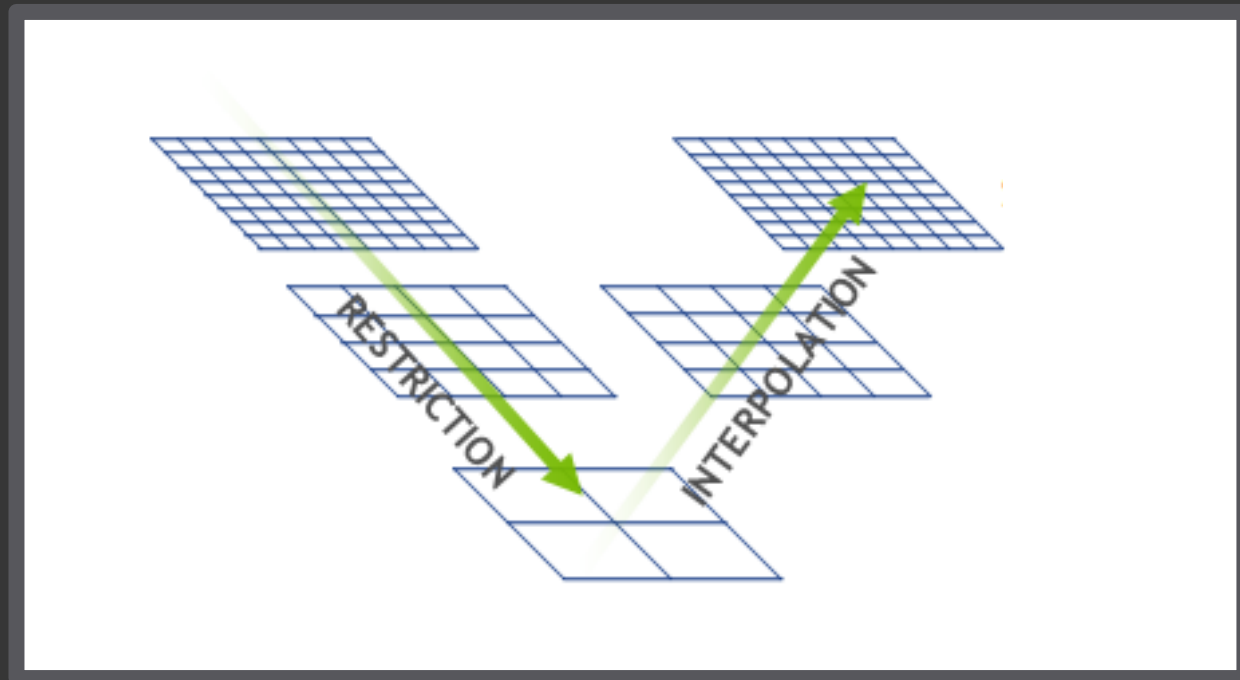
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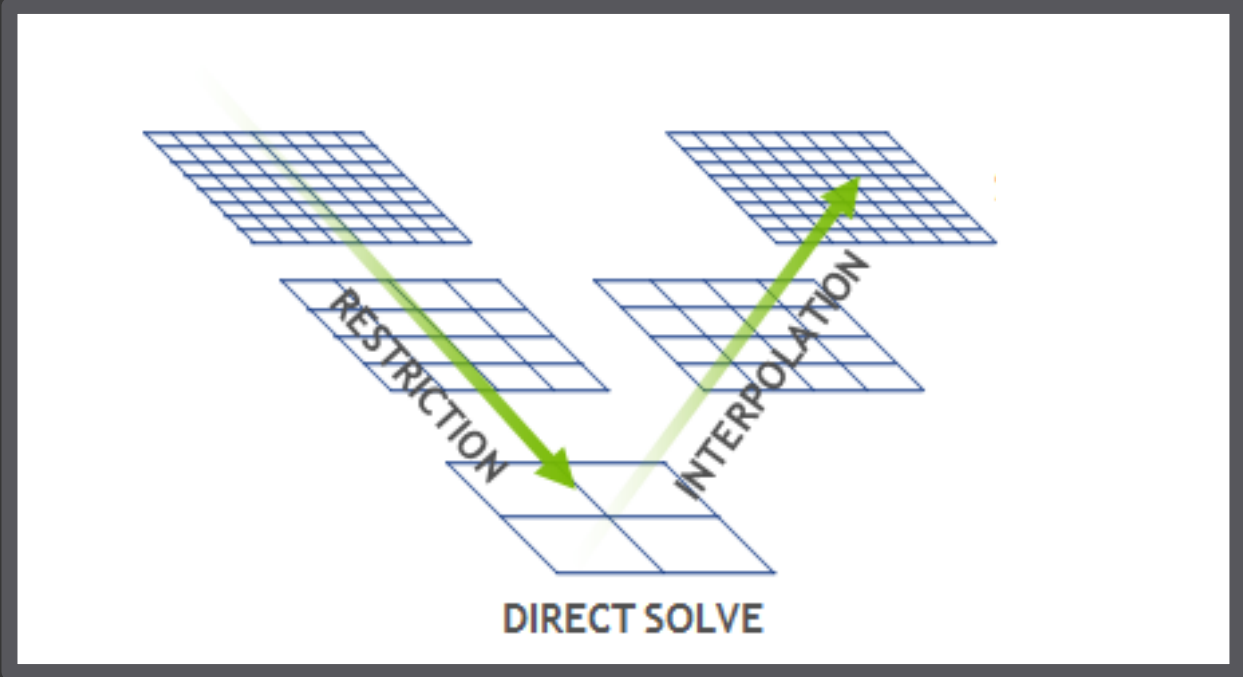
AMG and CPR preconditioners

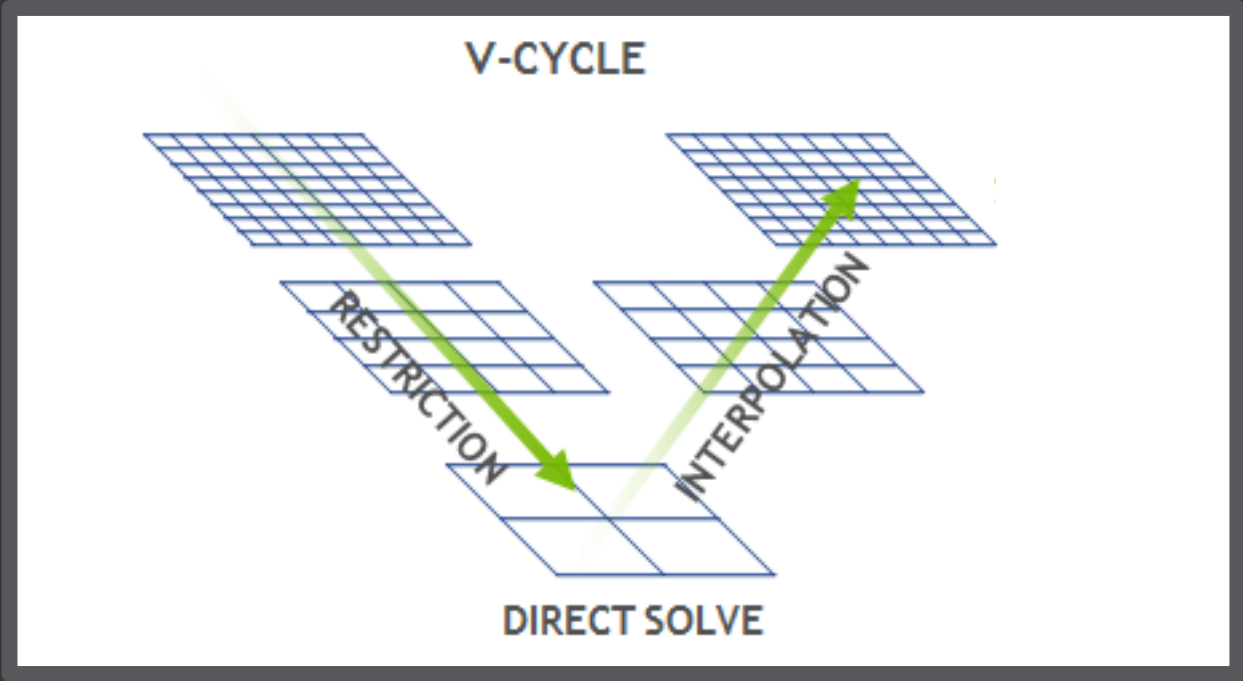
Parameter tuning

Results for Norne

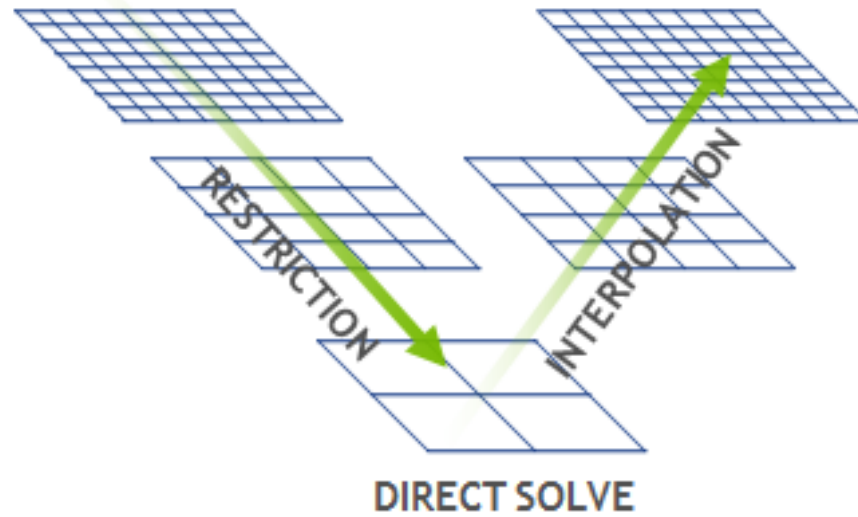
Results for real-field ensemble







CPR: Extract pressure



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improve runtime for individual systems

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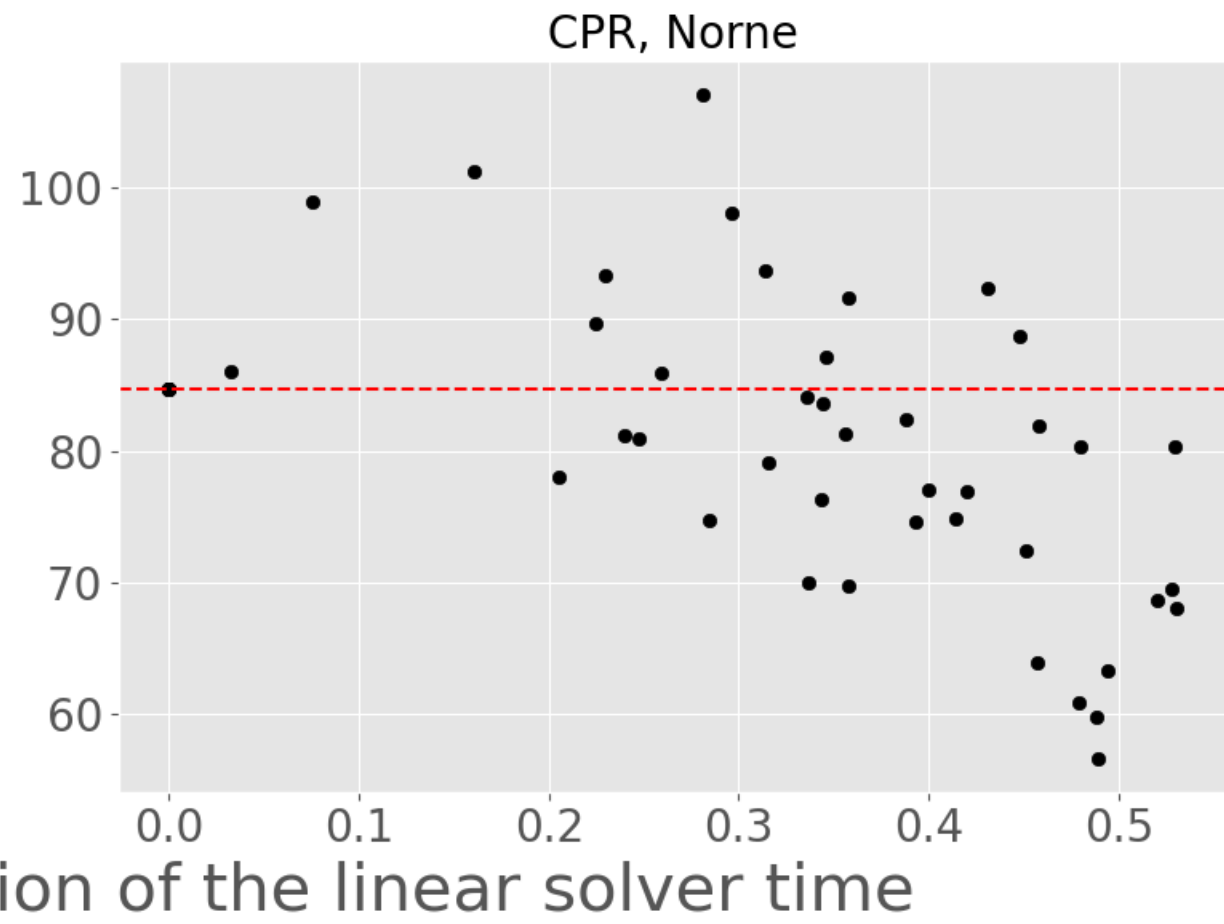
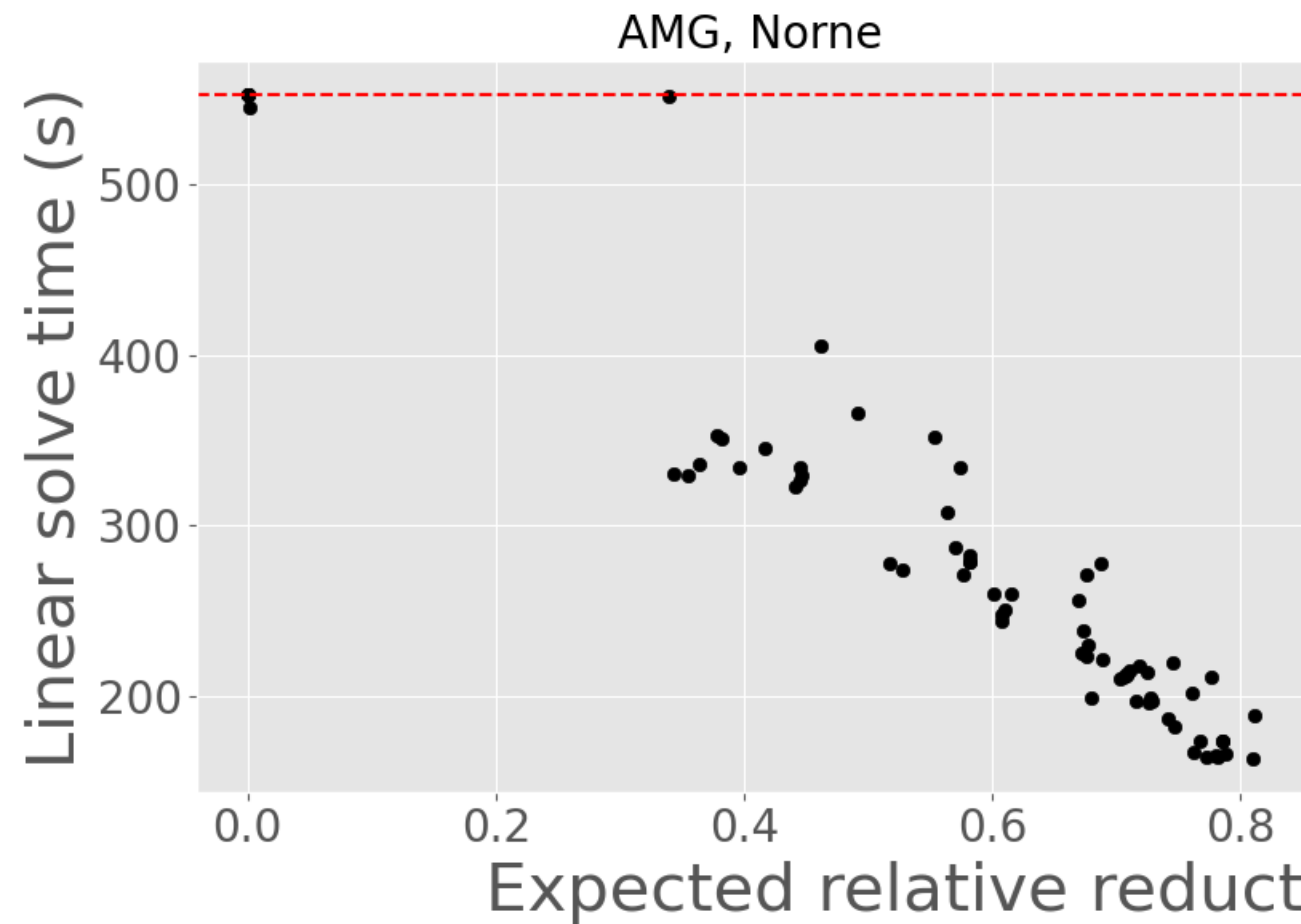
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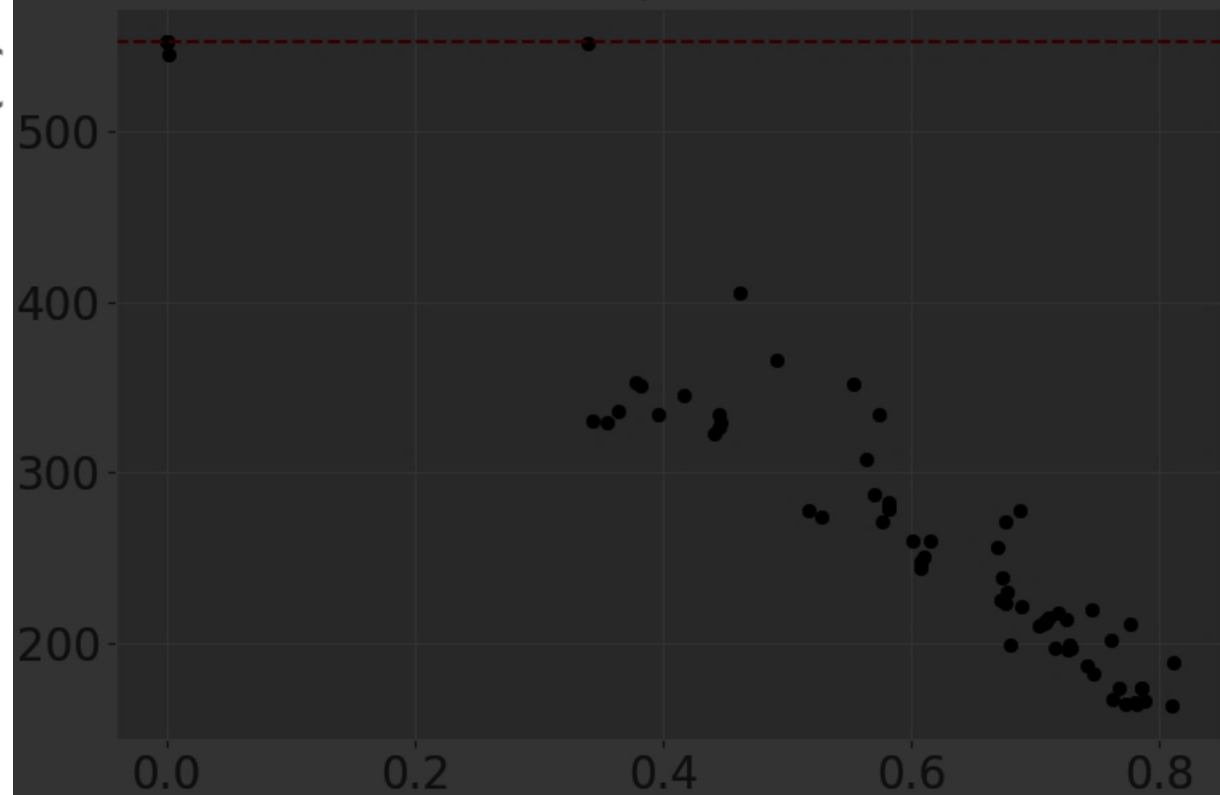
improve runtime for individual systems

Use parameters for full simulation

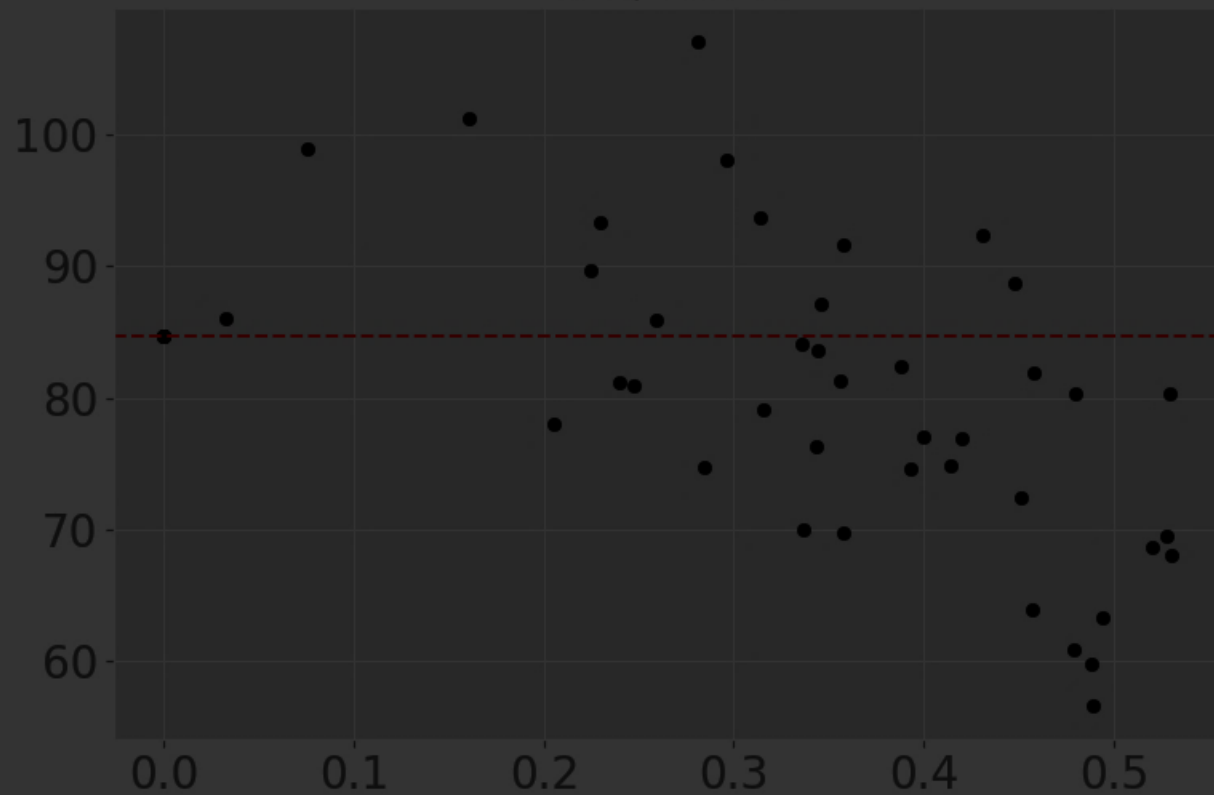


Linear solve time (s)

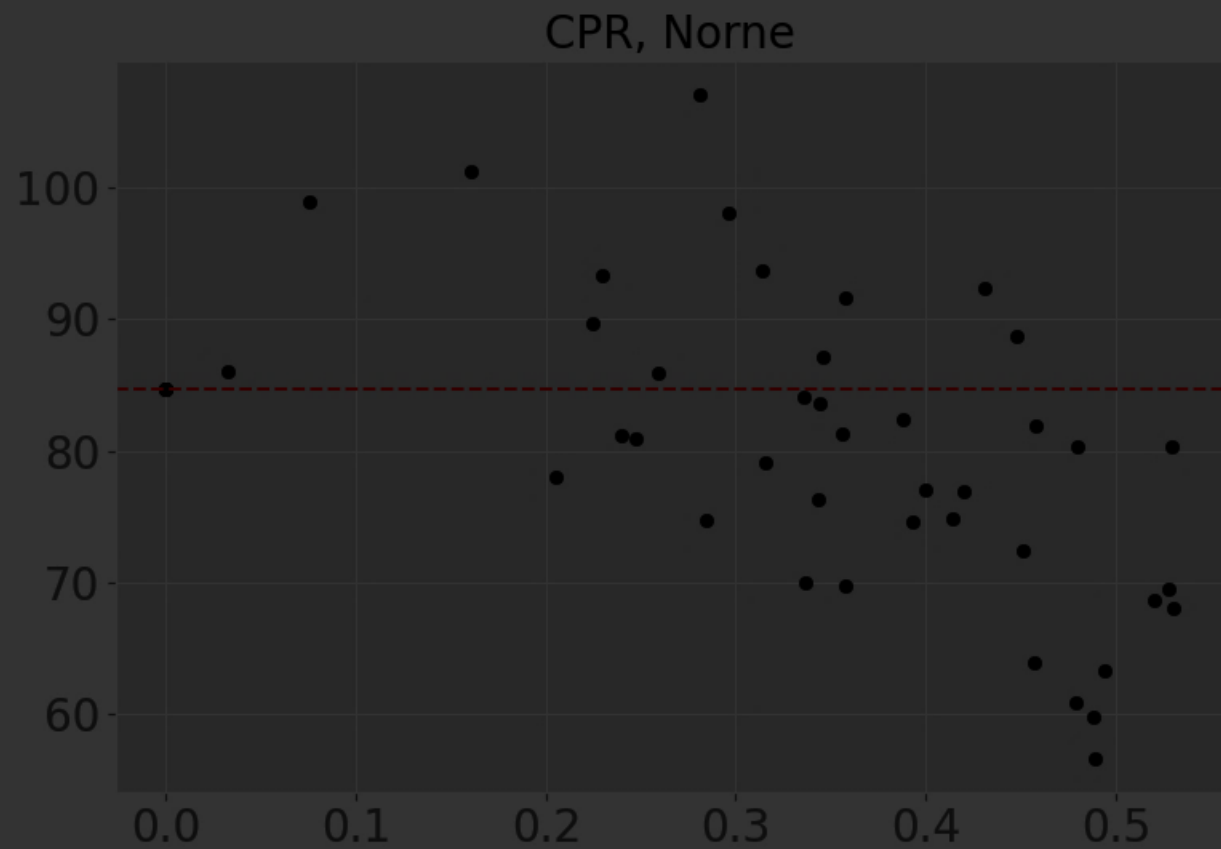
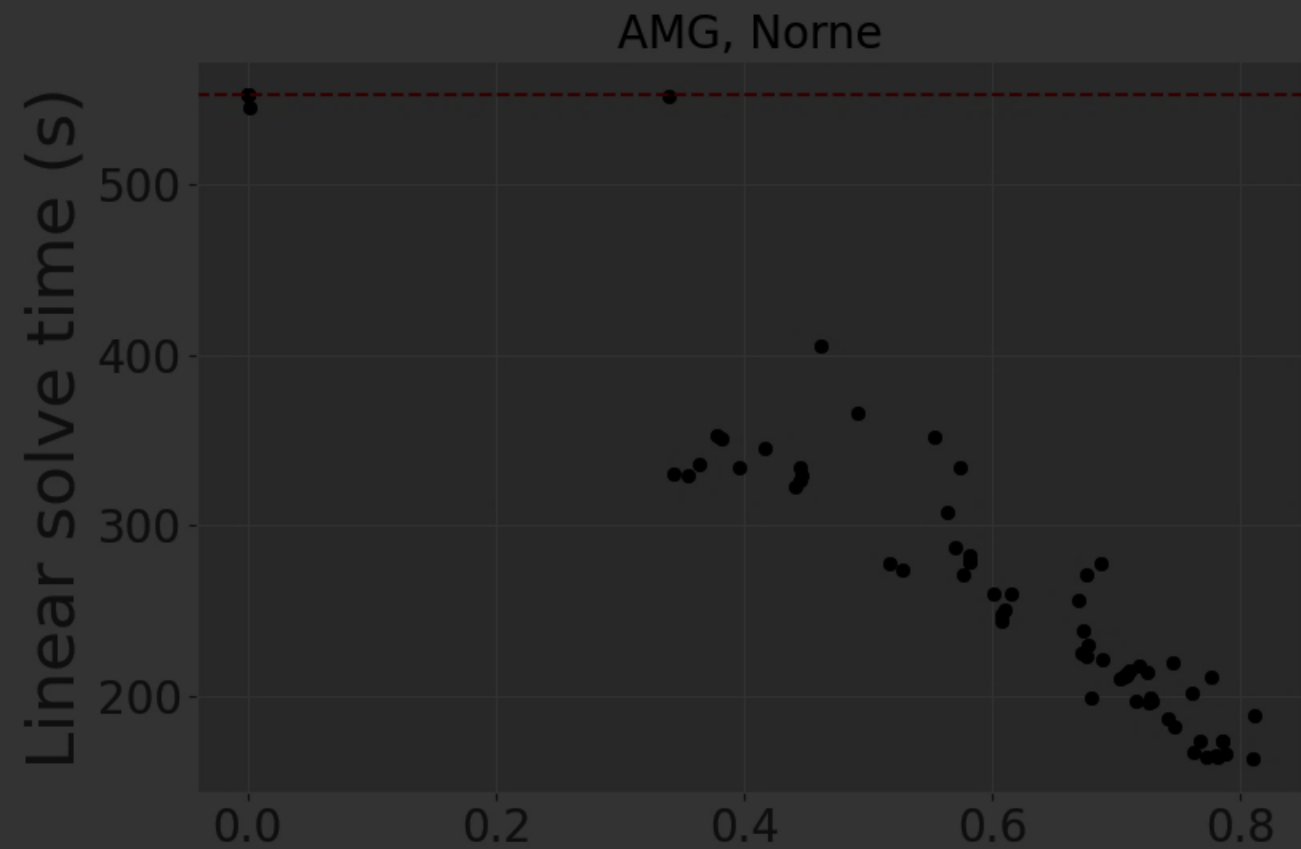
AMG, Norne



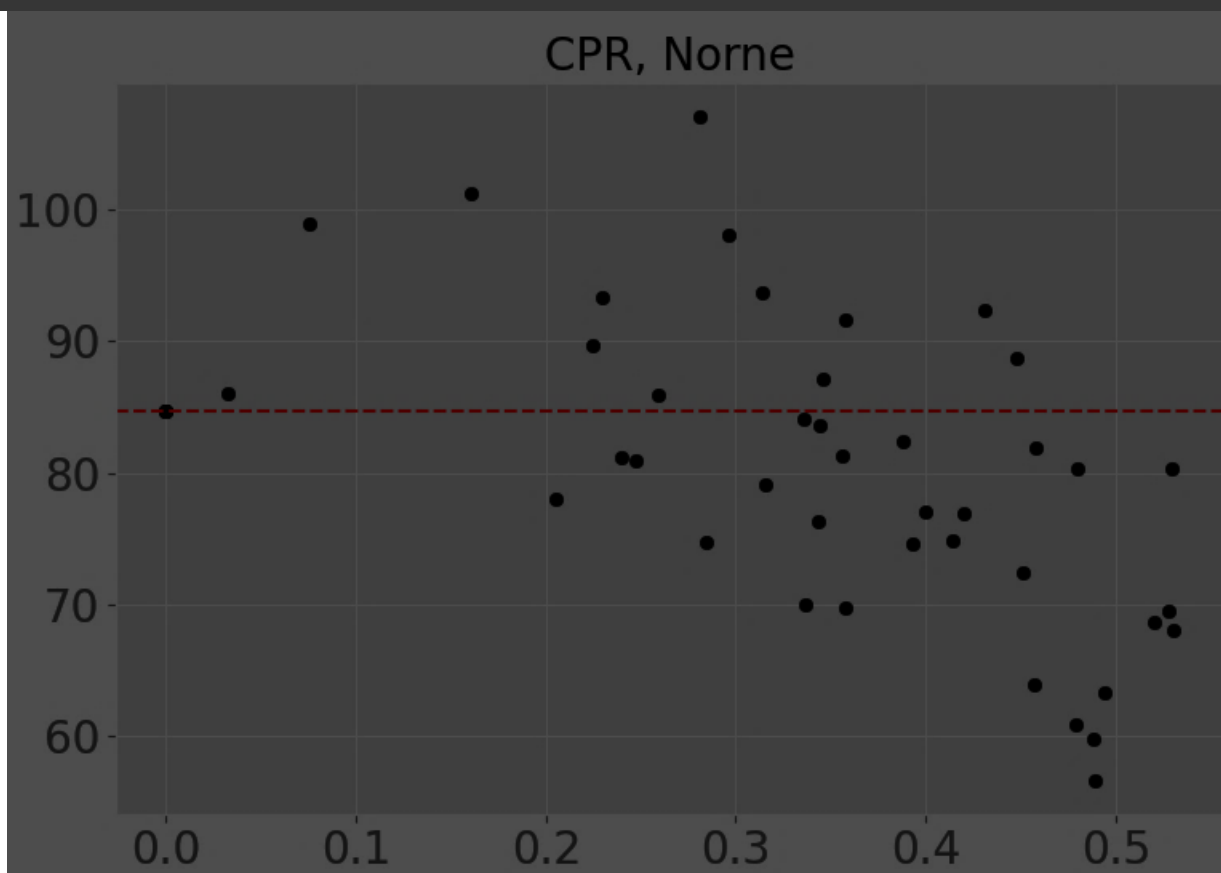
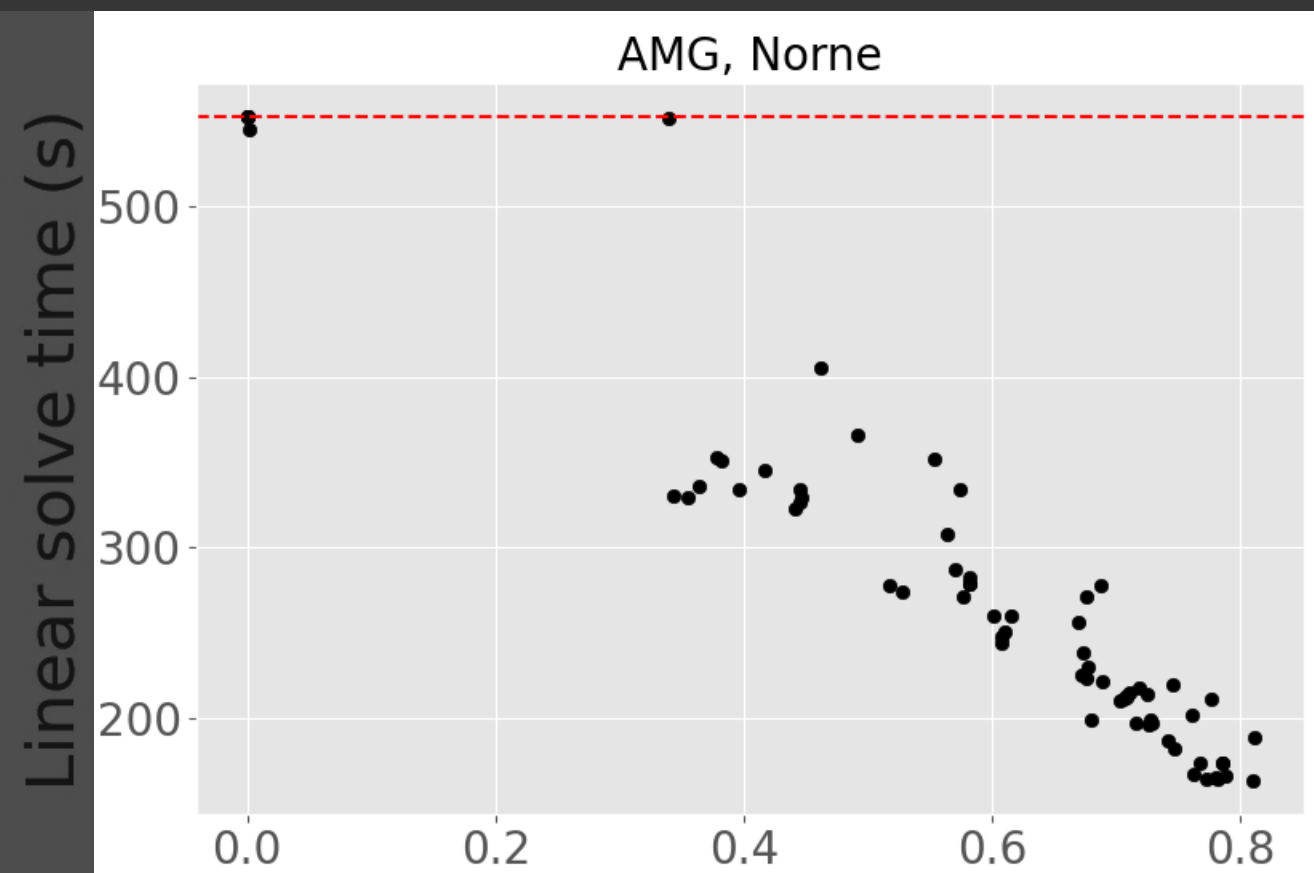
CPR, Norne



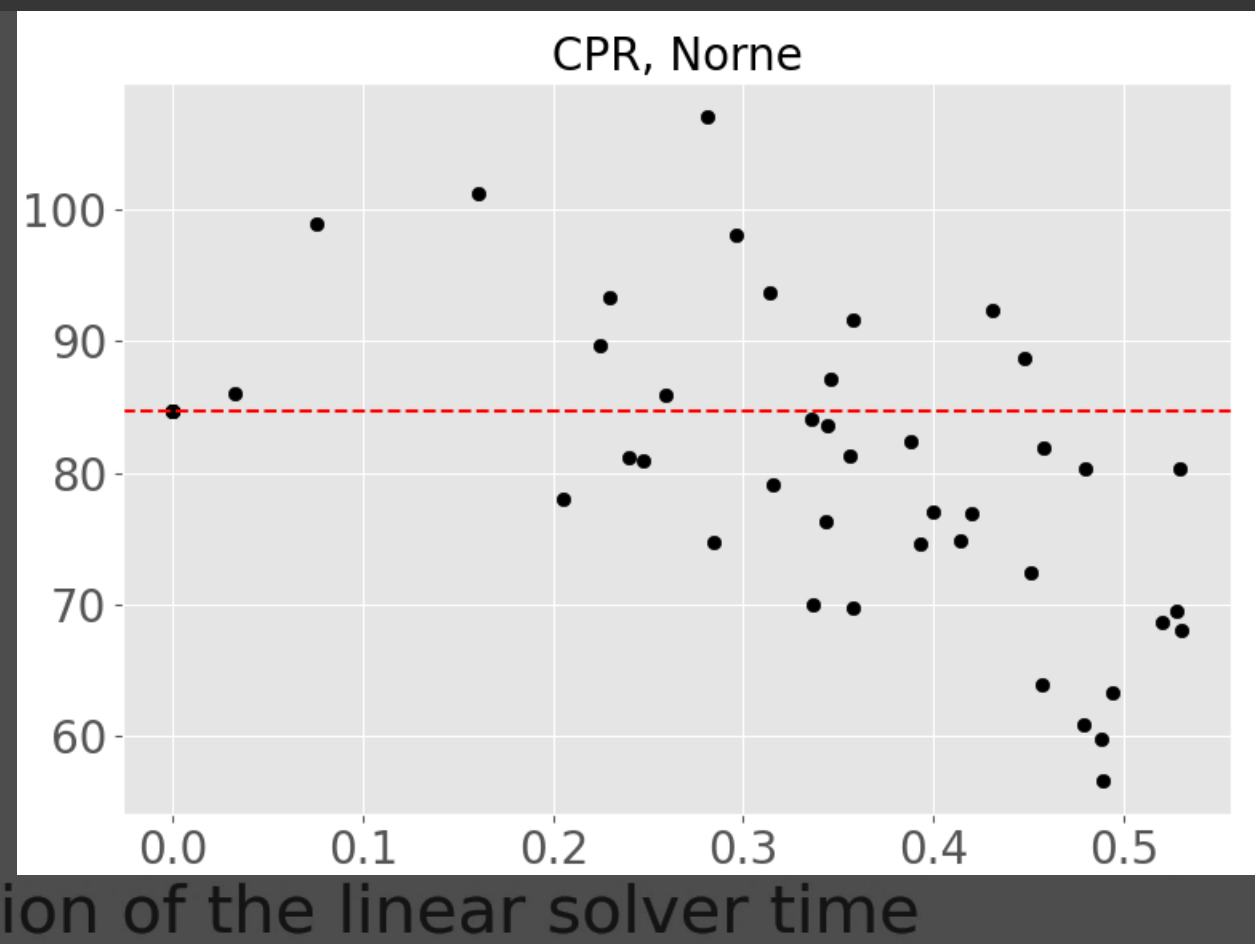
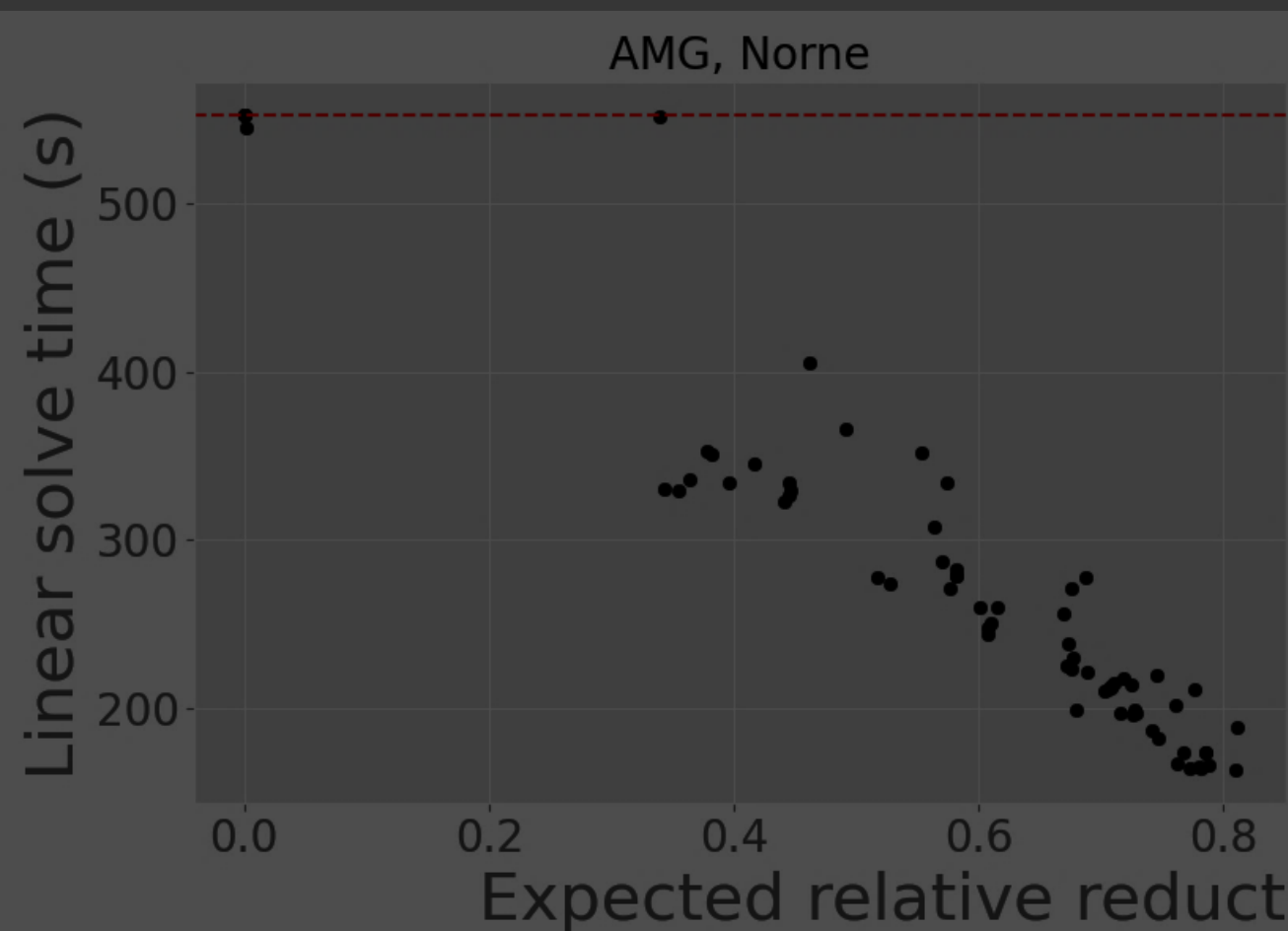
Expected relative reduction of the linear solver time

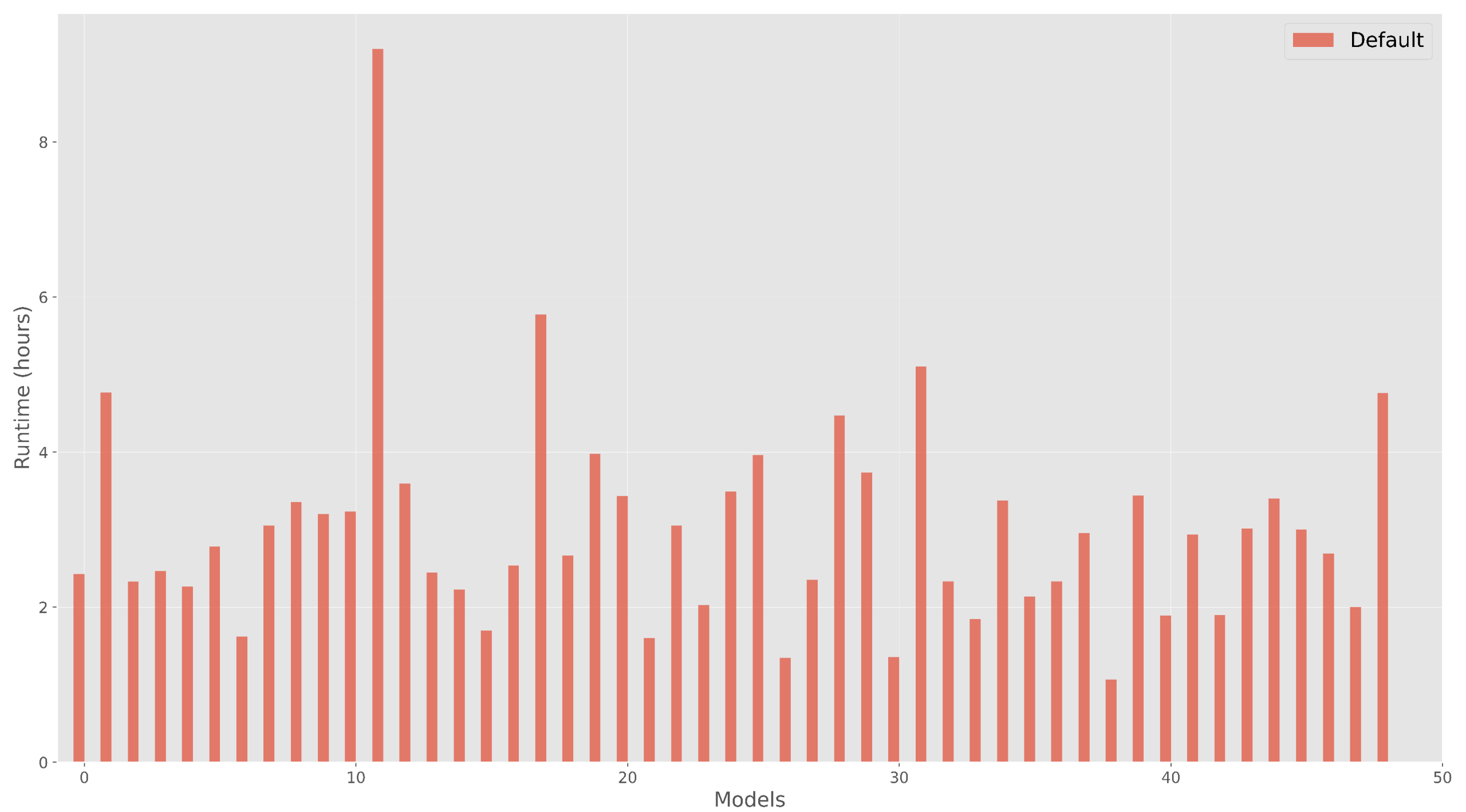


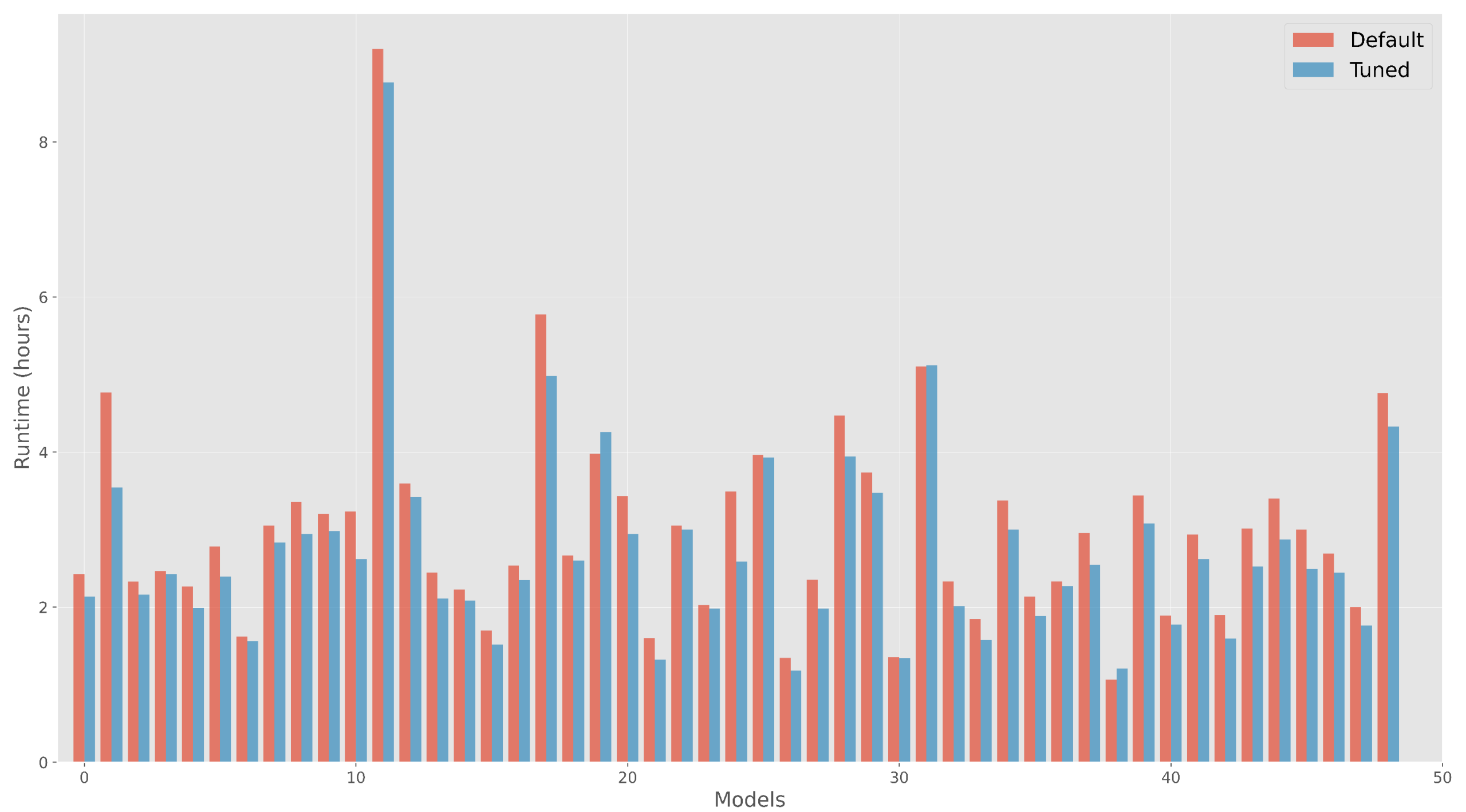
Expected relative reduction of the linear solver time



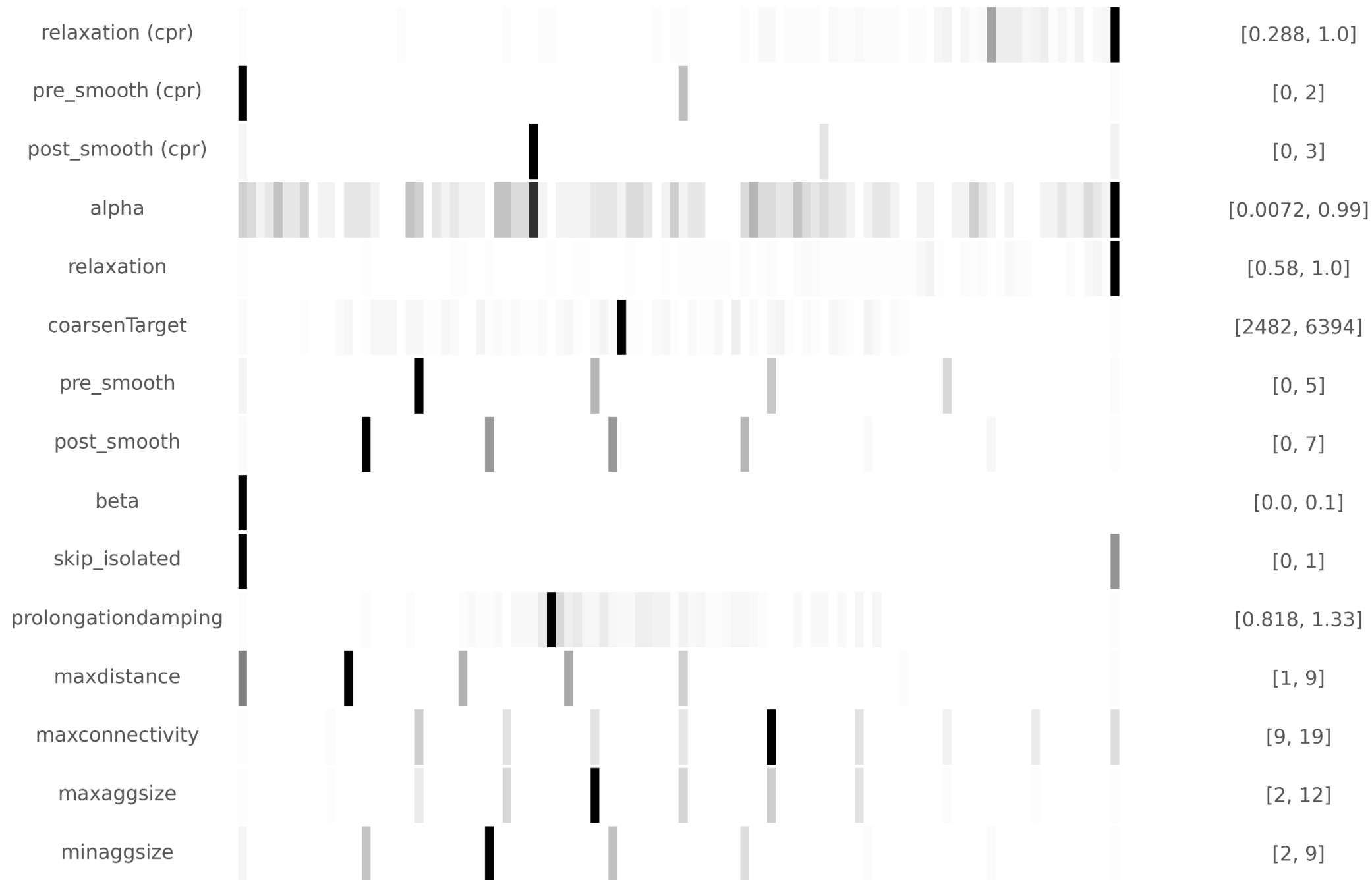
Expected relative reduction of the linear solver time

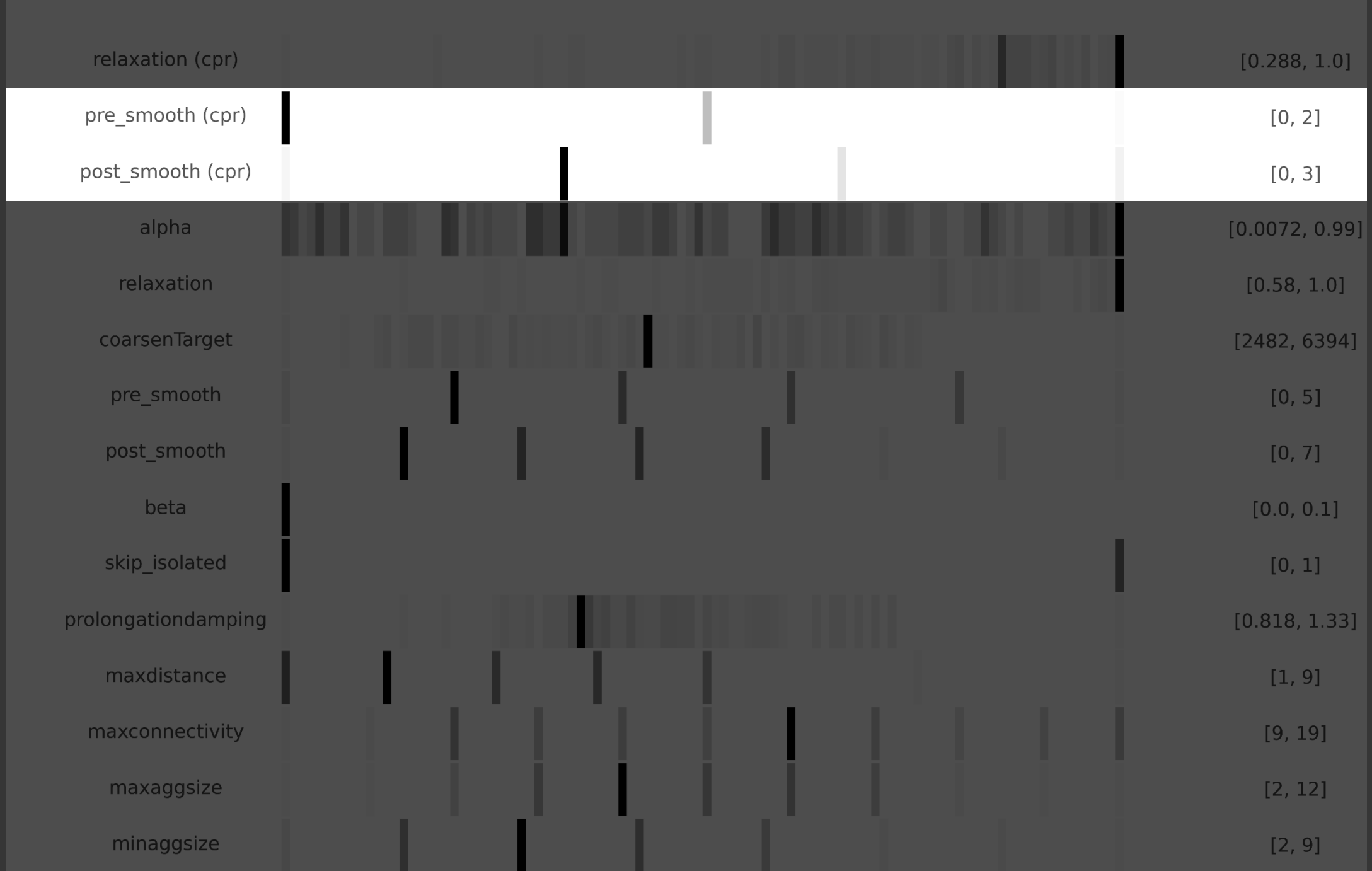












To be published:

*An automated and resource-efficient approach to
parameter tuning of AMG-based preconditioners for
efficient reservoir simulations*