

# Seminář aplikované matematiky

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## Active Set Expansion Strategies in MPRGP Algorithm

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od 16:00 hodin

Online (MS Teams)

(v případě zájmu požádejte o odkaz na emailu [dalibor.lukas@vsb.cz](mailto:dalibor.lukas@vsb.cz))

**Abstrakt:** The standard MPRGP expansion uses a projected line search in the free gradient direction with a fixed step length. Such a scheme is often too slow to identify the active set, requiring a large number of expansions. We propose to use adaptive step lengths based on the current gradient, which guarantees the decrease of the unconstrained cost function with different gradient-based search directions. Moreover, we also propose expanding the active set by projecting the optimal step for the unconstrained minimization. Numerical experiments demonstrate the benefits (up to 78 pct decrease in the number of Hessian multiplications) of our expansion step modifications on two benchmarks – contact problem of linear elasticity solved by TFETI and machine learning problems of SVM type, both implemented in PERMON toolbox.