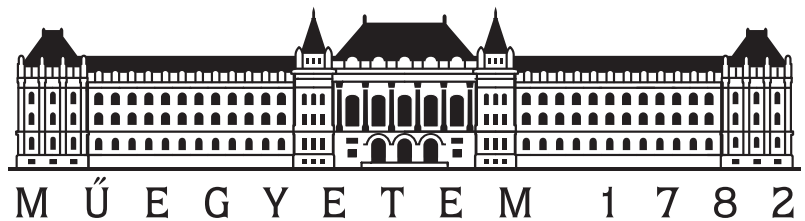
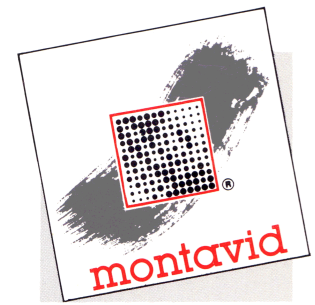
Newtonian noise estimation for Einstein Telescope – the effect of rock rheology

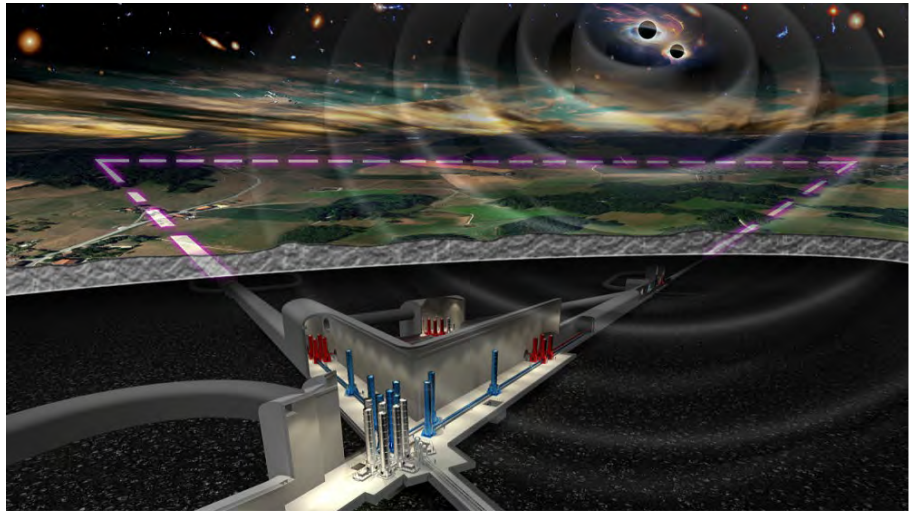
Tamás FÜLÖP[1,2], László KOVÁCS[3], Róbert KOVÁCS[1,2,4], Mátyás SZÜCS[1,2,4], Donát M. TAKÁCS[1,2], Péter VÁN[1,2,4]

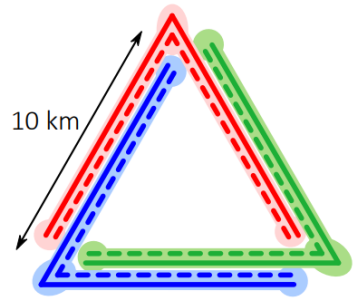
[1]Budapest University of Technology and Economics, [2]Montavid Thermodynamics Research Group, [3]ROCKSTUDY Ltd., [4]Wigner Research Centre for Physics





8st December, 2022





- Einstein telescope – increased sensitivity $\Longrightarrow$ distinguishing, separation and mitigation of noises are crucial
- Newtonian noise – existing calculations based on elasticity
- Rocks perform rheological (viscoelastic) behaviour – how to predict its effects?
- Commercial finite element softwares $\Longrightarrow$ not reliable enough
- Self-developed thermodynamically consistent symplectic-based finite difference method

Thank you for your attention!