

## Some applications of high field nanoplasmonics

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High intensity femtosecond laser pulses have been used to excite localized (LSPP) and propagating (SPP) surface plasmons. The extremely high electromagnetic field intensity in plasmonic hot spots has been used to study electronic and nuclear processes in some transparent materials [2] and on metallic (gold) surfaces [1]. Both the experimental and the theoretical modelling results are presented. Time-of-flight multiplasmon electron emission analysis, Raman spectroscopy and laser induced breakdown spectroscopy methods have been used to get the experimental data, and different software programmes for modelling the different processes [3]. The results of the analysis of both of our experimental and theoretical findings are briefly presented.

- [1] Surface-Plasmon-Assisted Cooper Pair Formation in Ordered Gold Films at Room Temperature. P.Racz and N.Kroo: *Phys. Wave Phen.* 27(3), 192-196 (2019)
- [2] Radiation dominated implosion with flat target. L. P. Csernai, M. Csete, I. N. Mishustin, A. Motornenko, I. Papp, L. M. Satarov, H. Stöcker, and N. Kroó: *Phys. Wave Phen.* 28(3), 187-199 (2020)
- [3] Laser Wake Field Collider. I. Papp, L. Bravina, M. Csete, I. N. Mishustin, D. Molnar, A. Motornenko, L. M. Satarov, H. Stöcker, D. Strottman, A. Szenes, D. Vass, T. S. Biro, L. P. Csernai, N. Kroo (NAPLIFE Collaboration): *Phys. Lett. A* 396, 127245 (2021)