ME 8:00am–9:30am Room: Paradise E

STRONG FIELD SCIENCE I: NONRELATIVISTIC INTERACTION

Todd Ditmire, Univ. of Texas-Austin, USA, Presider

ME1 8:00am (Invited)

The absolute phase of few-cycle laser pulses, *G.G. Paulus, F. Grasbon, H. Walther, P. Villoresi, M. Nisoli, S. Stagira, E. Priori, S. De Silvestri, Max Planck Inst., Germany.*

For few-cycle laser pulses, the temporal evolution of their electric fields depend on the phase of the carrier with respect to the pulses' envelope. Employing multiphoton ionization, we measured this so-called absolute phase for the first time by recording photoelectrons emitted in opposite direction.

ME2 8:30am (Invited)

High-field insights from the 1D 2e world, *J.H. Eberly, R. Panfili, Univ. of Rochester, USA; S.L. Haan, Calvin Col., USA.*

In high-field physics, classical simulations can provide valuable semi-quantitative insights. We report a classical study of an ensemble of 100,000 two-electron trajectories undergoing short-pulse high-field photoionization. We back-analyze trajectory histories in terms of a counter-intuitive slow-down scenario, in agreement with quantum results for the same model.

ME3 9:00am (Invited)

Physics of attosecond pulses, *P. Balcou, P.M. Paul, E.S. Toma, P. Breger, G. Mullot, F. Auge, H.-G. Muller, P. Agostini, ENSTA, France.*

We present how the existence of a train of pulses as short as 220 attoseconds was evidenced, and review other recent experiments demonstrating attosecond time localization or isolated attosecond pulses. The origin of such short optical pulses will be unveiled, and possible applications in atomic physics will be discussed.

MF 8:00am–9:30am Room: Paradise F

WAVEGUIDES

Glenn A. Clarke, Semrock Inc., USA, Presider

MF1 8:00am (Invited)

Raw material purity and supply for optical fiber manufacture, *Arthur Shirley, Glenn Rush, Katy Lee, BOC Gases, USA.*

The production of optical fibers requires rigorous materials handling to ensure the highest quality of the resulting products. The supply of the gases and chemicals depends greatly on the types and volumes of fibers produced.

MF2 8:30am

Raman spectroscopy of novel nonlinear-oxide glasses, *Clara Rivero, Kathleen Richardson, Alfons Schulte, Univ. of Central Florida, USA; Thierry Cardinal, Univ. of Bordeaux, France.*

New tellurium and titanium oxide networks are been investigated for Raman gain applications. These compositions exhibit high nonlinear coefficients and negligible absorption at the 1.3 and 1.55 micron communication wavelengths. Furthermore, the Raman spectra show a spectral bandwidth of approximately 1000 cm-1 and high relative Raman intensity.

MF3 8:45am

As-S-Se chalcogenide glasses for optical applications, *Cedric Lopez, Patrick LiKamWa, Martin Richardson, Arnaud Zoubir, Univ. of Central Florida, USA; Kathleen Richardson,Schott Glass Tech., USA.*

We report a systematic study on chalcogenide (As-S-Se) glasses with different compositions for optical applications. The optical properties of the bulk materials and their corresponding thin films are reported along with thermal characterization. Waveguides were fabricated by chemical etching and laser writing and specific properties such as loss were measured.

MF4 9:00am

Wavelength-scale rectangular waveguide field transformer realization, *M. Yang, H. Chen, J. Li, K.J. Webb, Purdue Univ., USA.*

Highly functional, compact optical field transformation is achieved in irregular rectangular waveguide structures. The optimized scattering surface of the waveguide is synthesized using a multi-resolution algorithm. The resulting waveguide structure is defined by electron beam lithography and a lift-off process.

MF5 9:15am

Comparison between lumped and distributed amplification in high-bit rates optical communication systems, *Armando Nolasco Pinto, Univ. of Aveiro, Portugal.*

At high-bit rates, special care must be taken in order simultaneously minimize nonlinear distortions and maximize the optical signal to noise ratio. We compare two different schemes of amplification, one based on lumped amplifiers and another based on distributed Raman amplification, in terms of nonlinear induced degradations and power penalty.