

POSMOL 2023

XXI International Workshop on Low-Energy Positron and Positronium Physics
XXIII International Symposium on Electron-Molecule Collisions and Swarms

Thursday, August 3 – Sunday, August 6, 2023
University of Notre Dame

SCHEDULE

Thursday, August 3, 2023

2nd floor McKenna Hall

4:00 PM - Registration

9:00 PM

205/206/207 McKenna Hall

7:00 PM - Welcome Reception

9:00 PM

Friday, August 4, 2023

215/216 McKenna Hall – Reyes Family Board Room

7:30 AM Continental Breakfast

8:00 AM Welcome **Patricia Clark**, Notre Dame Research

CHAIR: *Dan Slaughter*

8:15 AM Plenary 1: **Gustavo Garcia** *Electron and positron scattering from CO₂ and H₂O: Still open questions*

9:00 AM Joint E1: **Juraj Fedor** *Electron collisions with liquid microjets: spectroscopy and reactivity*

9:30 AM Joint P1: **Ilya Fabrikant** *Positronium collisions with atoms and molecules*

10:00 AM Break

E Parallel Session 10:30AM – 12:00PM

B01 McKenna Hall

CHAIR: *Paulo Lima-Vieira*

10:30 AM Invited E1: **Anne Lafosse** *Electron contribution to photon-induced desorption in molecular ices*

11:00 AM Invited E2: **Sam Eden** *Ionization and DEA experiments on laser-desorbed molecule*

11:30 AM Invited E3: **Dipayan Chakraborty** *Dynamics of resonant low energy electron attachment to ethanol producing hydroxide anions*

P Parallel Session 10:30AM – 12:00PM

B02 McKenna Hall

CHAIR: *Laszlo Liskay*

10:30 AM Invited P1: **Atsuo Kawasuso** *Positronium emission from semiconductor surfaces*

11:00 AM Invited P2: **Christoph Hugenschmidt** *Positronium emission from Ge(100) at high temperature*

11:30 AM Invited P3: **Yasuyuki Nagashima** *Progress in research using slow positron beams at Tokyo University of Science*

Group Photo

12:00 PM Meet outside (East) of McKenna Hall

Smith Ballroom, Morris Inn

12:00 PM Buffet Lunch

215/216 McKenna Hall – Reyes Family Board Room

CHAIR: *Sylwia Ptasinska*

1:45 PM Plenary talk 2: **Dermot Green** *Many-body theory of positron-molecule interactions*

E Parallel Session 2:45PM – 5:45PM

B01 McKenna Hall

CHAIR: *Jimena Gorfinkiel*

2:45 PM HOT TOPICS

Dan Slaughter *Dynamics of dissociative attachment of electrons to carboxylic acids*

Soubhik Mondal *Nuclear dynamics on metastable states*

Pamir Nag *Distant Symmetry Control in Electron-Induced Bond Cleavage in Pyrrole*

Janos Zsolt Mezei *Novell results for the low energy electron-induced reactivity of molecular cations*

Adam Singor *Photoionization, Rayleigh, and Raman scattering cross sections for the ground and excited vibrational levels of H_2^+*

Alan Falkowski *An iterative negative imaginary potential applied to the Schwinger multichannel method to model ionization effects*

3:45 PM Break

4:15 PM Invited E4: **Filipe Ferreira da Silva** *Electron interaction with boron containing molecules*

4:45 PM Invited E5: **Stephan Denifl** *The decay of temporary negative ions formed upon electron attachment to biologically relevant molecules*

5:15 PM Invited E6: **Spiridoula Matsika** *Theoretical description of electron induced processes in DNA building blocks*

P Parallel Session 2:45PM – 5:45PM

B02 McKenna Hall

CHAIR: *Michael Charlton*

2:45 PM HOT TOPICS

Francisco Fernandes Frighetto *Positron scattering from CH_4 , C_2H_4 and C_2H_2 with the Schwinger multichannel method implemented with a model potential*

Vincent Graves *R-Matrix investigations of low-energy positron scattering from biomolecules*

Varghese Anto Chirayath *Extracting elemental information from the topmost atomic layer to the bulk of the sample using Doppler broadened annihilation gamma spectroscopy*

Mateus Bergami *Solvent Effects on Positron Attachment to Hydrated Amino Acids*
Eugene Arthur-Baidoo *Positron annihilation and binding in aromatic and substituted ring molecules*
Sushil Sharma *Improving the experimental precision of ortho-positronium decay rate in vacuum with the J-PET detector*

3:45 PM Break

4:15 PM Invited P4: **Jose Mohallem** *Descriptors for positron binding to atoms and molecules*

4:45 PM Invited P5: **Takuma Yamashita** *Study of antihydrogen-positronium reactions by a four-body coupled rearrangement-channel calculation*

5:15 PM Invited P6: **Lucas de Sousa Borges** *Precision measurement of Lamb shift in muonium*

Jordan Hall Galleria

6:00 PM - Poster Session

9:00 PM

7:00 PM - Buffet Dinner

8:30 PM

Saturday, August 5, 2023

215/216 McKenna Hall – Reyes Family Board Room

7:30 AM Continental Breakfast

CHAIR: **Roberto Sennen Brusa**

8:00 AM Plenary 3: **Stefan Eriksson** *Testing fundamental physics with antihydrogen*

E Parallel Session 9:00AM – 12:00PM

B01 McKenna Hall

CHAIR: **Ron White**

9:00 AM Invited E7: **Satoru Kawaguchi** *Data-driven discovery of electron continuity equations in electron swarm maps*

9:30 AM Invited E8: **Danko Bosnjakovic** *Electron transport and streamer propagation in modeling of resistive plate chambers*

10:00 AM Break

10:30 AM Invited E9: **Masahiko Takahashi** *Electron-atom Compton scattering: a new and unique tool for imaging intramolecular atomic motion*

11:00 AM Invited E10: **Hajime Tanuma** *Mobility of molecular and cluster hydrogen ions in cooled hydrogen gas*

11:30 AM Invited E11: **Samantha dos Douguet** *Vibrational excitation and dissociation of polyatomic molecules*

P Parallel Session 9:00AM – 12:00PM

B02 McKenna Hall

CHAIR: **Roberto Sennen Brusa**

9:00 AM Invited P7: **Kosuke Yoshioka** *Study on laser cooling of positronium using a chirped train of laser pulses*

9:30 AM Invited P8: **Eve Stenson** *TBD*

10:00 AM Break

10:30 AM Invited P9: **Janko Nauta** *Gravitational and spectroscopic studies of antihydrogen in the ALPHA experiment*

11:00 AM Invited P10: **Pauline Comini** *GBAR experiment: first antihydrogen production and beyond*

11:30 AM Invited P11: **Ruggero Caravita** *Pulsed beams of cold antihydrogen and positronium for inertial experiments at the AEGIS experiment*

Smith Ballroom, Morris Inn

12:00 PM Buffet Lunch

215/216 McKenna Hall – Reyes Family Board Room

CHAIR: *Roman Curik*

1:45 PM Plenary 4: **Igor Bray** *Calculation of electron and positron collisions with light atoms and molecules*

E Parallel Session 2:45PM – 5:45PM

B01 McKenna Hall

CHAIR: *Roman Curik*

2:45 PM Invited E12: **Ksenia Bravaya** *Bound-state methods for electronic resonances*

3:15 PM Invited E13: **Viviane Schmidt** *Auto-detachment of anions in excited states*

3:45 PM Break

4:15 PM Invited E14: **Vasco Guerra** *Electron-neutral collision cross sections for H₂O*

4:45 PM Invited E15: **Jan Dvorak** *Multidimensional vibronic dynamics in collisions of molecules with slow electrons*

5:15 PM Invited E16: **Sarvesh Kumar** *Dynamics of negative ions in H₂O and D₂O observed through dissociative electron transfer experiments*

P Parallel Session 2:45PM – 5:45PM

B02 McKenna Hall

CHAIR: *James Sullivan*

2:45 PM Invited P12: **Mark Zammit** *Development of an antimatter chemistry network*

3:15 PM Invited P13: **Pawel Moskal** *First positronium imaging of humans using modular J-PET scanner*

3:45 PM Break

4:15 PM Invited P14: **Masanori Tachikawa** *Quantum Monte Carlo study on positron binding to atomic anion dimers*

4:45 PM Invited P15: **Josh Machacek** *Positron scattering from atoms*

5:15 PM Invited P16: **Dmitry Fursa** *Extraction of Ps-formation cross-sections from single-centre positron scattering calculations*

Eck Visitor Center Atrium

7:00 PM - Conference Dinner

9:00 PM

Sunday, August 6, 2023

215/216 McKenna Hall – Reyes Family Board Room

7:30 AM Continental Breakfast

CHAIR: *Dragana Maric*

8:45 AM Plenary 5: **Ron White** *Electron and positron transport processes in gaseous and liquid systems: theory, experiment and self-consistent cross-section sets using machine learning*

9:30 AM Break

10:00 AM Joint P2: **Alessandra S. Barbosa** *Positron scattering by molecules: recent advances and applications of the Schwinger multichannel method*

10:30 AM Joint E2: **James Sullivan** *Electrons in a Surko trap – low energy electron scattering from pyridine*

11:00 AM Conclusion **Dragana Maric** and **James Sullivan** Chairs of Scientific Committees

Smith Ballroom, Morris Inn

11:15 PM Boxed Lunches

Campus Tour

2:00 PM Meet outside the Eck Visitor Center