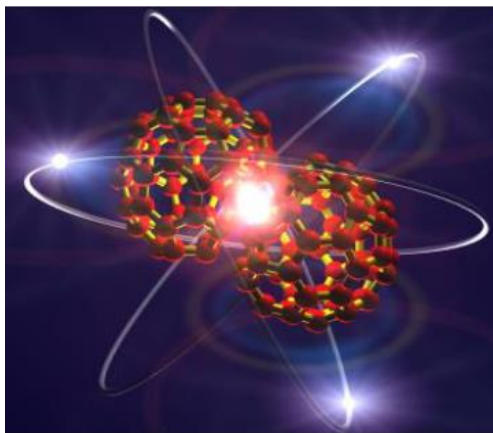


# The Ninth International Symposium “Atomic Cluster Collisions”



**ISACC 2019**

Canterbury Cathedral Lodge & University of Kent  
Canterbury, United Kingdom  
July 31 - August 03, 2019



**FINAL ANNOUNCEMENT**

## Scope

The ninth International Symposium "Atomic Cluster Collisions" (ISACC 2019) will take place on **July 31 - August 03, 2019** at Canterbury Cathedral Lodge and the University of Kent (Canterbury, United Kingdom). The ISACC 2019 is co-organized by [the University of Kent](#) and [MBN Research Center](#), Frankfurt am Main, Germany.

ISACC started as an international symposium on atomic cluster collisions in St. Petersburg, Russia in 2003. The second ISACC was held at the GSI, Darmstadt, Germany in 2007. Both symposia were satellites of the International Conferences on Photonic Electronic and Atomic Collisions (ICPEAC). The third ISACC returned to St. Petersburg in 2008 and was organized as a separate conference. The fourth ISACC took place in Ann Arbor, Michigan, USA in 2009; the fifth ISACC - in Berlin, Germany in 2011; the sixth - in Wuhan, China in 2013; the seventh - in Madrid, Spain in 2015. All four conferences were ICPEAC satellites. The eighth symposium was held in Varadero, Cuba in 2017. The ninth ISACC symposium will be held just after the ICPEAC 2019 (Normandy, France, July 23-30, 2019).

The ISACC 2019 will promote the growth and exchange of scientific information on the structure, properties and dynamics of complex atomic, molecular, biological and cluster systems studied primarily by means of photonic, electronic and atomic collisions. Particular attention will be devoted to dynamical phenomena, many-body effects taking place in clusters, nanostructures, molecular and biological systems, which include problems of fusion and fission, fragmentation, collective electron excitations, phase transitions, radiation damage, and many more. Both experimental and theoretical aspects of cluster physics uniquely placed between nuclear physics on one hand and atomic, molecular and solid state physics on the other will be subject of the symposium. Particular attention will be devoted to the utilization of advanced computational techniques and high performance computing in studies of collisions involving complex molecular systems. Links of the ISACC topics to novel and emerging technologies will be an important focus of ISACC 2019.

Finally, ISACC 2019 will provide a platform to host discussions about current research, technological challenges and related initiatives within the ISACC Topical Areas.

### **Topical Areas of ISACC:**

- Structure and dynamics of atomic and molecular clusters, and nanoparticles
- Structure and dynamics of biomolecules
- Cluster structure and dynamics on a surface
- Cluster-molecule interactions, reactivity and nanocatalysis
- Clustering in systems of various degrees of complexity
- Clusters and biomolecules in external fields: electric, magnetic, laser etc.
- Electron and photon cluster collisions
- Ion-cluster collisions
- Collision processes with biomolecules
- Cluster and biomolecular research with Free Electron Lasers

### **Scientific Programme**

The scientific programme for ISACC 2019 consists of interdisciplinary sessions which include invited lectures, review talks and progress reports. PhD students and young researchers are encouraged to submit their contributions and participate in the conference.

### **Important Dates**

|  |                    |
|--|--------------------|
| Distribution of the first announcement                     | September 17, 2018 |
| Distribution of the second announcement                    | March 15, 2019     |
| Deadline for abstract submission                           | June 01, 2019      |
| Deadline for early-bird registration and hotel reservation | June 01, 2019      |
| Deadline for registration                                  | July 01, 2019      |
| Distribution of the final announcement                     | July 02, 2019      |

## ISACC 2019 Program

Wednesday, July 31 (Canterbury Cathedral Lodge)

|                                     |  |
|-------------------------------------|--|
| 12 <sup>00</sup> – 16 <sup>00</sup> | Participants registration  |
| 14 <sup>00</sup> – 14 <sup>15</sup> | <b>ISACC 2019 Opening</b><br><b>Nigel J. Mason and Andrey V. Solov'yov</b>   |
| 14 <sup>15</sup> – 14 <sup>45</sup> | <b>(1) <u>Afternoon session I: Structure and dynamics of atomic clusters and nanoparticles</u></b><br><b>Henrik Cederquist</b> , Stockholm University, Stockholm, Sweden<br><i>Slow electron emission from excited dimer anions</i>                    |
| 14 <sup>45</sup> – 15 <sup>15</sup> | <b>Manfred Kappes</b> , Karlsruhe Institute of Technology, Karlsruhe, Germany<br><i>Experiments with carbon containing clusters</i>  |
| 15 <sup>15</sup> – 15 <sup>45</sup> | <b>Eleanor Campbell</b> , University of Edinburgh, Edinburgh, Scotland<br><i>Molecular Maracas: a multi-state molecular switch based on Li@C<sub>60</sub></i>  |
| 15 <sup>45</sup> – 16 <sup>15</sup> | <b>Mathias Rapacioli</b> , Université Paul Sabatier, Toulouse, France<br><i>Charge and excitation resonance in ionized aromatic molecular clusters</i>   |
| 16 <sup>15</sup> – 16 <sup>45</sup> | Coffee break   |
| 16 <sup>45</sup> – 17 <sup>15</sup> | <b>(2) <u>Afternoon session II: Clustering in systems of various degrees of complexity</u></b><br><b>Andrey V. Solov'yov</b> , MBN Research Center, Frankfurt am Main, Germany<br><i>Irradiation driven multiscale dynamics of MesoBioNano systems</i> |
| 17 <sup>15</sup> – 17 <sup>45</sup> | <b>Jean-Patrick Connerade</b> , Imperial College London, London, United Kingdom<br><i>The value of K-matrix theory for all systems held together by coulombic forces</i>   |
| 17 <sup>45</sup> – 18 <sup>15</sup> | <b>Eric Suraud</b> , Université Paul Sabatier, Toulouse, France<br><i>On the inclusion of dissipative effects in clusters and molecules</i>  |
| 19 <sup>00</sup> – 22 <sup>00</sup> | Welcome reception  |

Thursday, August 01 (Canterbury Cathedral Lodge)

|                                     |  |
|-------------------------------------|--|
| 9 <sup>00</sup> – 9 <sup>30</sup>   | <b>(3) <u>Morning session I: Collisions with atomic clusters and biomolecules</u></b><br><b>Thomas Schlathölter</b> , University of Groningen, Groningen, the Netherlands<br><i>Interactions of gas-phase biomolecular ions with fast ions and with soft X-ray photons</i>   |
| 9 <sup>30</sup> – 10 <sup>00</sup>  | <b>Jefferson Shinpaugh</b> , East Carolina University, Greenville, North Carolina, USA<br><i>Gold nanoparticles as a radiosensitizer for proton and carbon ion irradiation</i>   |
| 10 <sup>00</sup> – 10 <sup>30</sup> | <b>Rodolphe Antoine</b> , Université Claude Bernard Lyon1, Villeurbanne, France<br><i>Collision induced dissociation and collision cross sections of gold nanoclusters: new tools for structural characterization?</i>   |
| 10 <sup>30</sup> – 11 <sup>00</sup> | <b>Alexey Verkhovtsev</b> , MBN Research Center, Frankfurt am Main, Germany<br><i>Computational studies of collision-induced fragmentation of molecular systems</i>  |
| 11 <sup>00</sup> – 11 <sup>30</sup> | Coffee break   |
| 11 <sup>30</sup> – 12 <sup>00</sup> | <b>(4) <u>Morning session II: Clusters and biomolecules in external fields: electric, magnetic, laser, etc.</u></b><br><b>Brendan Dromey</b> , Queen's University Belfast, Belfast, United Kingdom<br><i>Studying nascent proton-driven radiation chemistry in H<sub>2</sub>O in real time using laser-based sources</i> |
| 12 <sup>00</sup> – 12 <sup>30</sup> | <b>Andrew Ellis</b> , University of Leicester, Leicester, United Kingdom<br><i>Accessing elusive molecular species by combining helium droplets with IR spectroscopy</i>   |
| 12 <sup>30</sup> – 13 <sup>00</sup> | <b>Eugene Surdutovich</b> , Oakland University, Rochester, Michigan, USA<br><i>Multifragmentation of Ar clusters by protons and heavier ions as a way to observe ion-induced shock waves</i>   |

|                                     |  |
|-------------------------------------|--|
| 13 <sup>00</sup> – 14 <sup>30</sup> | Lunch  |
| 14 <sup>30</sup> – 15 <sup>00</sup> | <b>(5) <u>Afternoon session I: Cluster structure and dynamics on a surface</u></b><br><b>Nigel J. Mason</b> , University of Kent, Canterbury, United Kingdom<br><i>Electron and photon induced chemistry in molecular clusters</i> |
| 15 <sup>00</sup> – 15 <sup>30</sup> | <b>Richard Palmer</b> , Swansea University, Swansea, United Kingdom<br><i>Nanoparticle beam deposition: A novel route to the solvent-free creation of heterogeneous catalysts</i>  |
| 15 <sup>30</sup> – 16 <sup>00</sup> | <b>Armin Götzhäuser</b> , University of Bielefeld, Bielefeld, Germany<br><i>Functional 2D nanomaterials and devices made by electron, ion and EUV induced processes</i>  |
| 16 <sup>00</sup> – 16 <sup>30</sup> | <b>Pablo de Vera</b> , MBN Research Center, Frankfurt am Main, Germany<br><i>Joint Monte Carlo and molecular dynamics simulation of electron beam-induced chemistry on surfaces</i>  |
| 16 <sup>30</sup> – 17 <sup>00</sup> | Coffee break   |
| 17 <sup>00</sup> – 18 <sup>00</sup> | <b><u>Poster session</u></b>   |

### Friday, August 02 (Canterbury Cathedral Lodge)

|                                     |  |
|-------------------------------------|--|
| 9 <sup>00</sup> – 9 <sup>30</sup>   | <b>(6) <u>Morning session I: Ion-cluster collisions</u></b><br><b>Michael Dingfelder</b> , East Carolina University, Greenville, North Carolina, USA<br><i>Track-structure simulations in nanometer geometries</i>   |
| 9 <sup>30</sup> – 9 <sup>55</sup>   | <b>Himadri Chakraborty</b> , Northwest Missouri State University, Maryville, Missouri, USA<br><i>Matter (ion) and antimatter (positron) collisions with fullerene nanomolecules</i>  |
| 9 <sup>55</sup> – 10 <sup>20</sup>  | <b>Mark Stockett</b> , Stockholm University, Stockholm, Sweden<br><i>Non-statistical fragmentation of C<sub>60</sub> and the formation of endohedral defect fullerenes</i>   |
| 10 <sup>20</sup> – 10 <sup>40</sup> | <b>Suvasthika Indrajith</b> , Normandy University, CEA-CIMAP, Caen, France<br><i>Energetic processing of hydrocarbons molecular species by ionizing radiation: towards the formation of cyclic species</i>   |
| 10 <sup>40</sup> – 11 <sup>00</sup> | <b>Andreas Alberg-Fløjborg</b> , University of Southern Denmark, Odense, Denmark<br><i>Ion collisions with biological targets. The early stages of ion beam cancer therapy</i>   |
| 11 <sup>00</sup> – 11 <sup>30</sup> | Coffee break   |
| 11 <sup>30</sup> – 12 <sup>00</sup> | <b>(7) <u>Morning session II: Cluster-molecule interactions, reactivity and nanocatalysis</u></b><br><b>Shiv N. Khanna</b> , Virginia Commonwealth University, Richmond, USA<br><i>Transforming redox properties of clusters using ligands to create super dopants for two-dimensional semiconductors and to synthesize nano p- n- junctions</i> |
| 12 <sup>00</sup> – 12 <sup>30</sup> | <b>Sam Eden</b> , The Open University, Milton Keynes, United Kingdom<br><i>Tracing radiation-induced reaction products to specific neutral isomer and cluster precursors</i>   |
| 12 <sup>30</sup> – 13 <sup>00</sup> | <b>Jon Golding</b> , The Open University, Milton Keynes, United Kingdom<br><i>Element choice for nanoparticle radiosensitisers</i>   |
| 13 <sup>00</sup> – 13 <sup>15</sup> | Conference photo   |
| 13 <sup>15</sup> – 14 <sup>30</sup> | Lunch  |
| 14 <sup>30</sup> – 15 <sup>00</sup> | <b>(8) <u>Afternoon session I: Cluster and biomolecular research with Free Electron Lasers</u></b><br><b>Kiyoshi Ueda</b> , Tohoku University, Sendai, Japan<br><i>Atomic cluster experiments at SACLA, an XFEL in Japan</i>   |
| 15 <sup>00</sup> – 15 <sup>30</sup> | <b>Jan-Michael Rost</b> , Max Planck Institute for the Physics of Complex Systems, Dresden, Germany<br><i>Purification of XFEL spectra</i>   |
| 15 <sup>30</sup> – 16 <sup>00</sup> | <b>Sadia Bari</b> , Deutsches Elektronen-Synchrotron DESY, Hamburg, Germany<br><i>Gas-phase proteins studied at advanced light sources</i>   |

|                                     |                   |
|-------------------------------------|-------------------|
| 16 <sup>00</sup> – 16 <sup>15</sup> | Coffee break      |
| 16 <sup>15</sup> - 18 <sup>00</sup> | Conference tour   |
| 19 <sup>00</sup> - 22 <sup>00</sup> | Conference dinner |

**Saturday, August 03 (Darwin Conference Suite, Darwin College, the University of Kent)**

|                                     |   |
|-------------------------------------|---|
|                                     | <b>(9) <u>Morning session I: Electron and photon cluster collisions</u></b>   |
| 9 <sup>00</sup> – 9 <sup>30</sup>   | <b>Ilya Fabrikant</b> , University of Nebraska-Lincoln, Nebraska, USA<br><i>Recent advances in the theory of electron attachment to molecules and clusters</i>  |
| 9 <sup>30</sup> – 9 <sup>55</sup>   | <b>Andreas Mauracher</b> , Leopold-Franzens-University, Innsbruck, Austria<br><i>Size-selected charged helium droplets</i>  |
| 9 <sup>55</sup> – 10 <sup>20</sup>  | <b>Jozef Lengyel</b> , Technische Universität München, Garching, Germany<br><i>Effect of cluster environment on electron- and ion-mediated chemistry: from atmospheric chemistry to nanocatalysis</i> |
| 10 <sup>20</sup> – 10 <sup>40</sup> | <b>Xin Wang</b> , University of Groningen, Groningen, the Netherlands<br><i>Soft X-ray photofragmentation of gas phase oligonucleotides</i>   |
| 10 <sup>40</sup> – 11 <sup>00</sup> | <b>Alfred Msezane</b> , Clark Atlanta University, Atlanta, United States<br><i>New manifestations in low-energy electron scattering from the actinide atoms Pu, Cm, Bk and Lr</i>                     |
| 11 <sup>00</sup> – 11 <sup>30</sup> | Coffee break  |
|                                     | <b>(10) <u>Morning session II: Collisions with biomolecules</u></b>   |
| 11 <sup>30</sup> – 12 <sup>00</sup> | <b>Linda Feketeová</b> , Université Claude Bernard Lyon 1, Villeurbanne, France<br><i>Evaporation of water molecules from excited water nanodroplets</i>  |
| 12 <sup>00</sup> – 12 <sup>30</sup> | <b>Roland Wester</b> , Leopold-Franzens-University, Innsbruck, Austria<br><i>Reactions dynamics of small ionic clusters</i>   |
| 12 <sup>30</sup> – 13 <sup>00</sup> | <b>Hidetsugu Tsuchida</b> , Kyoto University, Kyoto, Japan<br><i>Influence of secondary electrons on biomolecular damage in water by fast heavy-ion irradiation</i>                                   |
| 13 <sup>00</sup> – 13 <sup>15</sup> | <b>ISACC 2019 Closing</b>   |

**Best presentation prize for Early Career Researchers**

Thanks to one of our sponsors, Springer, we are organizing a competition for the best presentation prize for Early Career Researchers defined as Master students doing research projects, PhD students and early postdocs (up to 3 years after PhD). The prize will consist on both a certificate and an economic reward.

**Topical Issue of the European Physical Journal D**

We have the pleasure to announce that a **Topical Issue “Atomic Cluster Collisions 2019”** will be launched in the **European Physical Journal D: Atomic, Molecular, Optical and Plasma Physics**, <https://epjd.epj.org/>. All conference participants are encouraged to submit their novel results to this Topical Issue. The deadline for submission is **December 30, 2019**. Guest Editors are Dr. Alexey Verkhovtsev, Dr. Pablo de Vera, Prof. Nigel Mason, and Prof. Andrey Solov'yov.

Further information will be available on the conference website soon.

**Conference Venue and Travel Information**

The Conference will be hosted by [the Canterbury Cathedral Lodge](#) (on July 31 - August 02) and [Darwin College](#) of the University of Kent (on August 03), Canterbury, United Kingdom.

Canterbury is one of the UK's oldest cities (predating Roman arrival) befitting its role as capital of Kent, the Gateway to the United Kingdom from Europe, hence easy travel links from ICPEAC. Canterbury and its cathedral is also the ecclesiastical centre of the Church of England.



Canterbury is located approximately 100 kilometres to the south-east from London and 30 kilometres to the north from Dover. You can get to Canterbury **(i)** by train from **London-City** or **London-Heathrow** airports; **(ii)** by EUROSTAR train from **Paris, Lille** or **Calais**; and **(iii)** by ferry from **Caen** via Portsmouth.

#### **By plane from:**

- London City Airport: take a train to Stratford International and then change to a Southeastern train to Canterbury.
- London Heathrow Airport: take a tube to London-Victoria or St Pancras International railway stations and then change to a Southeastern train to Canterbury.

The train schedule and tickets to Southeastern rail can be found at <https://www.southeasternrailway.co.uk>.

#### **By EUROSTAR train:**

Take the Eurostar train to Ashford International and then change to a Southeastern train to Canterbury. The train schedule and tickets for Eurostar can be found at <https://www.eurostar.com> and for Southeastern train at <https://www.southeasternrailway.co.uk>.

We can arrange **shuttle buses** for the trains:

- on July 30: Eurostar leaving Paris at 20:13, arriving Ashford at 21:07;
  - on July 31: Eurostar leaving Paris at 11:13, arriving Ashford at 12:07;
- and for departure
- on August 03: leaving Ashford at 14:55, arriving Paris at 17:47.

Those who are interested, please send your request to [isacc.conference@gmail.com](mailto:isacc.conference@gmail.com).

#### **By ferry:**

There are regular ferry routes from Caen or Le Havre to Portsmouth (<https://www.directferries.com>), which is located about 190 km from Canterbury. The train connections from Portsmouth to Canterbury (via London) could be checked at <https://ticket.southernrailway.com>.

### **Registration**

The late registration is still possible under the following conditions:

- Conference fee: 450 Euro
- Undergraduate and PhD students: 350 Euro

To register, participants of ISACC 2019 should fill in [the electronic registration form](#) at the Conference website, [www.isacc-portal.org/](http://www.isacc-portal.org/). The created account should be used for the payment procedure.

The fee includes the book of abstracts, coffee breaks, lunches, conference reception and conference dinner. The payment to the order of "ISACC2019" should be made

#### **By bank transfer to**

Bank account name: MBN Research Center gGmbH  
Bank name: Deutsche Bank  
Branch address: Hauptstr. 5, 61462 Koenigstein, Germany  
IBAN: DE15500700240137588000  
BIC: DEUTDEDBFRA

Please quote your **NAME** and **ISACC2019** on the transfer. Please ensure there are no charges to us.

## **Accommodation**

Please book a room directly at [the Canterbury Cathedral Lodge](#) (symposium venue for July 31 - August 02). Cheaper single rooms are available on the campus of the University of Kent (symposium location on August 03). You can book a room directly using the link <http://www.kent.ac.uk/holidays>.

Canterbury has a wide range of accommodation from student halls on campus to 4/5\* hotels in the city as well as many Bed and Breakfast.

## **Abstract Submission**

Late abstracts for poster presentations should be submitted electronically as soon as possible. Please send your abstracts to [isacc.conference@gmail.com](mailto:isacc.conference@gmail.com) with the title "ISACC 2019 Abstract". The abstracts are to be supplied by the authors typewritten in camera-ready form in A4 format (210x297 mm). The length of the abstract should not exceed two pages. The abstract template with more detailed preparation guidelines is available for download [here](#). Please note that we accept files in the MS Word document format.

## **Social Program**

| <b>Event</b>      | <b>Date / Time</b>                                      |
|-------------------|---|
| Welcome reception | Wednesday, July 31, 19 <sup>00</sup> - 22 <sup>00</sup> |
| Conference tour   | Friday, August 02, 16 <sup>15</sup> - 18 <sup>00</sup>  |
| Conference dinner | Friday, August 02, 19 <sup>00</sup> - 22 <sup>00</sup>  |

The guided conference tour will be organized around the historical centre of Canterbury.

## **Official Invitation and Visa**

Conference participants are advised to check the visa requirements for travel to United Kingdom.

## **Conference Language**

The language of the conference is English.

## **International Advisory Committee**

- Andrey Solov'yov (MBN Research Center, Germany) **Chair**
- Catherine Bréchnignac (Laboratoire Aime Cotton, CNRS, France)
- Michel Broyer (University of Lyon, France)
- Jean-Patrick Connerade (Imperial College London, United Kingdom)
- Francesco Gianturco (University of Innsbruck, Austria)
- Bernd Huber (Centre Interdisciplinaire de Recherche Ions Lasers, CIRIL - GANIL, France)
- Julius Jellinek (Argonne National Laboratory, USA)
- Shiv Khanna (Virginia Commonwealth University, USA)
- Thomas Möller (Technical University of Berlin, Germany)
- Eric Suraud (Université Paul Sabatier, France)

## **Organizing Committee**

- Nigel Mason (University of Kent, United Kingdom), **Co-Chair**
- Sharon Humm (University of Kent, United Kingdom), **Local Organising Committee Secretary**
- Andrey Solov'yov (MBN Research Center, Germany), **Co-Chair**
- Pablo de Vera (MBN Research Center, Germany)
- Irina Solovyeva (MBN Research Center, Germany)
- Alexey Verkhovtsev (MBN Research Center, Germany)

## **Sponsors**

The conference will be held under the auspices of the following sponsors:

- University of Kent, Canterbury, United Kingdom
- MBN Research Center, Frankfurt am Main, Germany
- Springer Verlag

## **Contact Information**

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Website: [www.mbnresearch.com](http://www.mbnresearch.com)

## **ISACC Conference Series Web Portal**

Updated information on the conference series is available at [www.isacc-portal.org](http://www.isacc-portal.org)

## **Conference e-mail**

[isacc.conference@gmail.com](mailto:isacc.conference@gmail.com)