



*Advancing  
Astronomy and  
Geophysics*

**ROYAL ASTRONOMICAL SOCIETY**

# Meeting Notes: 11 January 2019

---

**RAS Specialist Discussion Meeting**

## **The Supernova – Supernova Remnant Connection**

**10:30–15:30** in the Geological Society Lecture Theatre, Burlington House, Piccadilly, London W1J 0BG

Organisers: Antonia Bevan (UCL)

Ilse De Looze (UCL)

Mikako Matsuura (Cardiff)

Justyn Maund (Sheffield)

Roger Wesson (UCL)

**RAS Specialist Discussion Meeting**

## **Recent advances in solar partially ionized plasma**

**10:30–15:30** in the Lecture Theatre of the Royal Astronomical Society, Burlington House, Piccadilly, London W1J 0BQ

Organisers: Andrew Hillier (Exeter)

Alexander Russell (Dundee)

---

Open (Monthly A & G meeting)

**16:00 - 16:30 Dr. David Jess, Queen's University Belfast, Fowler 'G' award**

Waves, shocks and heating in the Sun's most powerful magnetic fields

**16:30-17:00 Dr. Amelie Saintonge, University College London, Fowler 'A' award**

Probing galaxy evolution with dust and gas

**17:00 - 17:30 Dr. Sownak Bose, Harvard Smithsonian Centre for Astrophysics, Michael Penston Thesis Prize**

Cosmology Beyond Cold Dark Matter

**17:30 - 18:00 Dr. Ben Rozitis, Open University, RAS Fellowship**

Probing Solar System Processes Using Extreme Asteroids

---

**Admission fees:**

**Admission to Specialist Discussion Meetings is free to RAS Fellows, £15 to non-fellows (£5 to students), cash or cheque only, collected at the door. Admission to the subsequent Open (Monthly A&G) Meeting of the Royal Astronomical Society is open to all, at no charge. For more information see [www.ras.ac.uk](http://www.ras.ac.uk)**

## RAS Specialist Discussion Meeting

# The Supernova – Supernova Remnant Connection

10:30–15:30 in the Geological Society Lecture Theatre, Burlington House, Piccadilly, London W1J 0BG

Organisers: Antonia Bevan (UCL)

Ilse De Looze (UCL)

Roger Wesson (UCL)

Justyn Maund (Sheffield)

Mikako Matsuura (Cardiff)

**Summary:** The vast majority of supernovae explode in distant galaxies where resolving details of their structure, circumstellar environments and chemistry is challenging. In contrast, there are a number of nearby supernova remnants whose complex properties can be well understood from detailed, spatially resolved observations. By understanding the evolution of supernovae from their outburst to their nebular phase to that of supernova remnants, we can use the high quality observations of supernova remnants in our local environment to better understand the physics of supernovae. This specialist meeting will bring together experts in supernovae at all stages of their evolution to discuss issues ranging from dust formation, morphologies and progenitor systems to circumstellar environments and jets.

---

### 10:00 Registration & Coffee

---

Morning Session (10.30 – 12.30)

**10.30 – 10.35**      **Welcome**

**10.35 - 11.05**      **Dan Milisavljevic**

*Connecting Distant Supernovae with Nearby Supernova Remnants  
Progenitors to remnants*

**11.05 - 11.35**      **Kate Maguire**

*Probing the explosions of Type Ia supernovae using late-time observations*

**11.35 - 11.50**      **Mark Hollands**

*Partially burnt remnants of SNIax in the Milky Way*

**11.50 - 12.20**      **Thomas Janka**

*3D core-collapse supernova modeling and applications to Cas A and other  
supernova remnants*

**12.20-12.35**      **Ning-Chen Sun**

*Progenitors of Type Ibn SN 2006jc and SN 2015G*

**12.35 - 12.50**      **Matt Nicholl**

*First observations of a superluminous supernova 1000d after explosion*

**12.50 – 13.45**      **LUNCH**

Afternoon session (13.45-15.30)

*Dust formation and destruction by SNe*

**13.45 - 14.15**      **Rubina Kotak**

*Tbc*

**14.15 - 14.30**      **Roger Wesson**

*Old and new dust in SN1995N*

**14.30 - 14.45**      **Hannah Chawner**

*Dust emission in Galactic Supernova Remnants*

**14.45 - 15.00**      **Felix Priestley**

*The pre- and post-shock dust mass in Cassiopeia A*

**15.00 - 15.15**      **Florian Kirchschrager**

*Dust destruction by the reverse shock in Cas A*

**15.15 - 15.30**      **Lars Mattson**

*Interstellar dust in evolving 3D supernova shock waves*

**15.30-16.00**      **Tea** will be available in the Lower Library of the Geological Society for those attending the Open (Monthly A&G) Meeting of the Royal Astronomical Society

---

Suggested hashtag: #RASSupernovae

---

16.00 Open (Monthly A&G) Meeting

**Admission fees:**

Admission to Specialist Discussion Meetings is free to RAS Fellows, £15 to non-fellows (£5 to students) cash or cheque only, collected at the door. Admission to the subsequent Open (Monthly A&G) Meeting of the Royal Astronomical Society is open to all, at no charge.

For more information see [www.ras.ac.uk](http://www.ras.ac.uk)

## RAS Specialist Discussion Meeting

# Recent advances in solar partially ionized plasma

10:30–15:30 in the Lecture Theatre of the Royal Astronomical Society, Burlington House, Piccadilly, London W1J 0BQ

Organisers: Andrew Hillier (Exeter)

Alexander Russell (Dundee)

**Summary:** In the last decade, breakthroughs in solar observations have given strong new impetus to understanding partially ionised plasma in the Sun. For instance, the dynamic motions of prominence material, spicules and coronal rain now reveal MHD waves and instabilities in the solar corona, while it has become apparent that the chromosphere hosts magnetic reconnection at the base of coronal loops as well as playing a key role in the transport and dissipation of energy in the quiet Sun and solar flares. Unlike fully-ionised coronal plasmas, which have been studied much more extensively, the bulk of the fluid that forms these regions is composed of neutral atoms. These do not directly feel the magnetic forces, but the plasma is nonetheless clearly structured by the magnetic field, via coupling with ions and electrons, which is controlled by complex processes like collisions, charge exchange, and ionisation and recombination. This meeting will look at the current methods used to model partially ionised plasmas, how they are improving our understanding of solar phenomena such as MHD waves, shocks and magnetic reconnection, future improvements, and synergies with other fields. This topic is of particular relevance now as we look to understand how models can be connected to future high resolution observations by DKIST and EST.

---

**10:00 – 10:30**                      **Registration & Coffee**

---

Morning Session (10.30 – 12.30)

- |                      |  |
|----------------------|--|
| <b>10:30 – 10:35</b> | <b>Welcome</b>   |
| <b>10:35 – 11:15</b> | <b>Roberto Soler</b><br><i>Waves and instabilities in the partially ionised solar plasma: an overview</i>  |
| <b>11:15 – 11:32</b> | <b>Jose-Luis Ballester</b><br><i>Effect of heating and cooling processes on the temporal behaviour of MHD waves in a partially ionized prominence plasma</i> |
| <b>11:32 – 11:49</b> | <b>Istvan Ballai</b><br><i>Waves in partially ionised plasmas in non-equilibrium ionisation</i>  |
| <b>11:49 – 12:06</b> | <b>Ben Snow</b><br><i>Shock substructure in partially-ionised plasma</i>   |
| <b>12:06 – 12:23</b> | <b>Roger Dufresne</b><br><i>Ion Populations in Astrophysical Plasmas: Carbon in the Lower Solar Atmosphere</i>   |
| <b>12:23 – 12:40</b> | <b>Petr Heinzel</b><br><i>Partial ionization of hydrogen plasma in the solar atmosphere - a non-LTE modeler's view</i>                                       |
| <b>12.40 – 13:40</b> | <b>LUNCH and posters</b>   |

Afternoon Session (13:40 – 15:30)

- 13:40 – 14:20**      **Elena Khomenko**  
*Modeling of solar partially ionised plasma*
- 14:20 – 14:37**      **Błażej Kuźma**  
Heating of the partially-ionized solar chromosphere by 2-fluid acoustic waves
- 14:37 – 14:54**      **Beatrice Popescu**  
*Propagation and damping of fast magneto-acoustic shock waves in a stratified atmosphere using the two-fluid approximation*
- 14:54 – 15:11**      **Ramon Oliver**  
*Dynamics of partially ionised coronal rain*
- 15:11 – 15:28**      **Manuel Collados**  
*Observational aspects of the solar partially ionised plasma with EST*
- 15:28 – 15:30**      **Closing comments**
- 
- 15:30 – 16:00**      **Tea** will be available in the Lower Library of the Geological Society for those attending the Open (Monthly A&G) Meeting of the Royal Astronomical Society

---

Suggested hashtag: #PIPSun

---

**16:00 Open (Monthly A&G) Meeting**

## Notes for Fellows of the Society

### 1. **ADMISSION FEES**

Admission to the Open (Monthly A&G) Meeting of the RAS is open to all, at no charge. Admission to Specialist Discussion Meetings is free to RAS Fellows, and £15 to non-fellows (£5 to students), cash or cheque only, collected at the door.

### 3. **ATTENDANCE BY GUESTS AT THE MONTHLY A&G (OPEN) MEETING**

Guests of the Society (particularly students) who have attended the Specialist Discussion Meeting are most welcome to attend the Open (Monthly A&G) Meeting of the Society, which commences at 16:00 in the Lecture Theatre of the Geological Society. This meeting is open to all, not just RAS members.

### 4. **UPDATES TO MEETING PROGRAMMES**

Please refer to the meetings pages at <http://www.ras.ac.uk/> for the most up to date meetings information.

## Code of Conduct

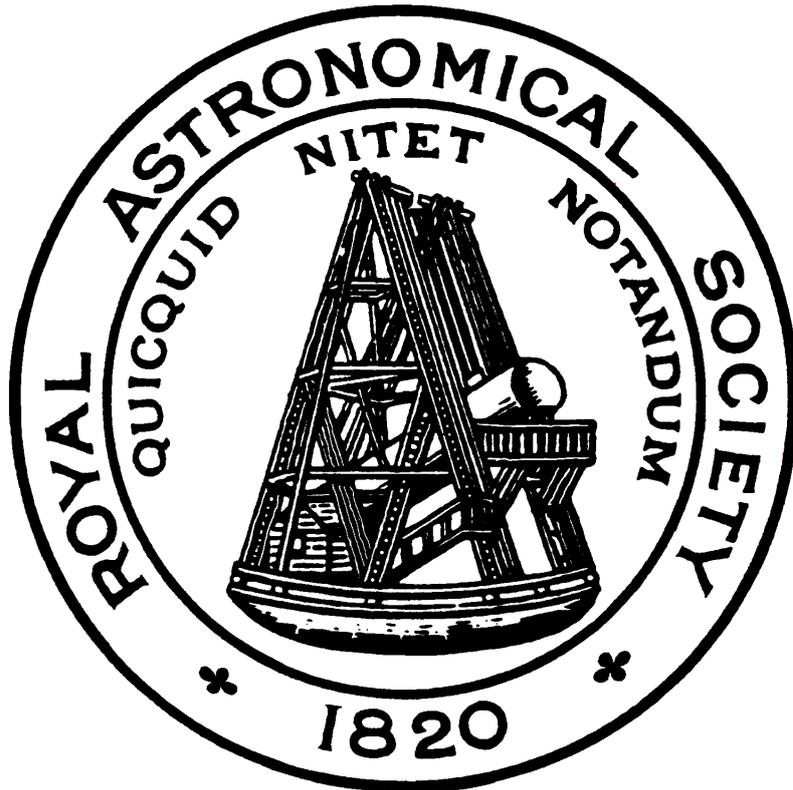
We value the participation of everyone at Royal Astronomical Society events and want all attendees to have an enjoyable and fulfilling experience. Accordingly, all attendees are expected to show respect and courtesy to other attendees and staff.

As such the RAS will be a harassment-free environment for everyone, regardless of gender, sexual orientation, disability, physical appearance, body size, race, nationality, religion. We do not tolerate harassment of attendees in any form.

- Lecturers give their time freely, many have travelled a considerable distance, some are very distinguished, some are early career scientists perhaps giving a lecture at this level for the first time, and all deserve a fair and encouraging hearing. Please try to be on time for the start of a session, or otherwise slip quietly into the lecture theatre, refrain from loud conversations outside the doors and switch off mobile phones, and if you must use a lap-top computer do so inconspicuously in one of the rear seats.
- Harassment includes offensive verbal comments related to gender, sexual orientation, disability, physical appearance, body size, race, religion, sexual images in public spaces, deliberate intimidation, stalking, following, harassing photography or recording, sustained disruption of talks or other events, inappropriate physical contact, and unwelcome sexual attention.
- All communication given by lecturers, organisers and attendees should be appropriate for a professional audience including people of many different backgrounds. Sexual language, jokes and imagery is not appropriate for any event.
- Be kind to others. Do not insult or put down other attendees.
- Respect RAS staff.
- Behave professionally. Remember that harassment and sexist, racist, or exclusionary jokes are not appropriate.

Participants asked to stop any harassing behaviour are expected to comply immediately. Attendees violating these rules may be asked to leave the event, without a refund of any charge that may have been levied.

Thank you for helping make this a welcoming, respectful space for all.



*Advancing  
Astronomy and  
Geophysics*

**Address:** *Royal Astronomical Society  
Burlington House  
Piccadilly  
London, W1J 0BQ*

**Telephone:** *0207 734 3307*

**Email:** *info@ras.ac.uk*

**Website:** *www.ras.ac.uk*