



→ SUMMER SCHOOL ALPBACH 2017

The Dusty Universe

18 – 27 July 2017 | Alpbach/Tyrol – Austria

Details and further information: www.summerschoolalpbach.at

A large, vibrant image of a cosmic dust nebula, showing intricate patterns of orange, yellow, and blue light against a dark background. The word 'PROGRAMME' is overlaid in large, white, sans-serif capital letters across the upper portion of the image.

PROGRAMME



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SUMMER SCHOOL ALPBACH - DUST IN THE UNIVERSE

For ten days, participants attend stimulating lectures on dust in the Universe, its composition and structure and associated scientific challenges, justifications why and how to observe dust remotely and work intensely in groups to define and design a space mission, all under the supervision of noted scientific and engineering experts within the field.

Students are offered the opportunity to learn how space missions covering the electromagnetic spectrum from X-rays to mm wavelengths have benefited the process of understanding dust, its role in and use as a diagnostic for cosmic.

Participants engage in an in-depth learning experience. Students at the Alpbach Summer School 2017 are being informed about past achievements and current issues, and invited to propose ideas to further explore the dusty Universe.

Four student teams are being setup to define the scientific objectives of a space mission and a preliminary end-to-end mission design including the spacecraft, scientific instruments, mission and science operations that will meet the stated objectives. Students are expected to select and research the problem to be addressed by their specific space mission and to cooperatively work with their team members to meet difficult deadlines to develop their own working style.

As the highlight of the workshops, each team presents their short mission study to an expert review panel and all other teams, tutors and lecturers on the last day.

The Summer School is organised by FFG and co-sponsored by ESA and the national space authorities of ESA member, associate and cooperating states. A traditional partner is the International Space Science Institute. It is also supported by Austrospace, the association of Austrian space industries and research institutions.

EuroPlanet offers support for student grants.



PROGRAMME

MONDAY, JULY 17

INDIVIDUAL ARRIVAL OF PARTICIPANTS

16:00-18:30 REGISTRATION AT THE SCHOOL HOUSE

19:00 RECEPTION AT THE BÖGLERHOF

THUESDAY, JULY 18

08:00 REGISTRATION

09:00 **Opening with ESA Director of Science, Alvaro Gimenez, Peter Jankowitsch & Andreas Geisler, FFG and Pascale Ehrenfreund, Chair of DLR Executive Board**

10:00 COFFEE BREAK

10:30 **WHY DO WE STUDY DUST**
Christoffel Waelkens, University of Leuven

11:30 **HOW TO OVERSERVE DUST REMOTELY – OUTSIDE THE SOLAR SYSTEM**
Marc Sauvage, CEA Saclay

12:30 LUNCH BREAK

15:00 **DUST FROM EVOLVED STARS AND SUPERNOVAE:**
Mike Barlow, University College London

16:00 COFFEE BREAK

16:30 **DUST IN GALAXIES OVER COSMIC TIME**
Dieter Lutz, Max Planck Institute for Extraterrestrial Physics, Garching

17:30 **WORKSHOP PREPARATION:**
Project Phases, Team Building and Team Structuring
Peter Falkner, ESA

19:00 JOINT DINNER AT THE BÖGLERHOF

WEDNESDAY, JULY 19

- 09:00 **COMPOSITION AND STRUCTURE OF DUST**
Christoffel Waelkens, University of Leuven
- 10:00 **MISSION AND SYSTEM DESIGN**
Peter Falkner, ESA
- 11:00 **COFFEE BREAK**
- 11:30 **DUST DIAGNOSTICS IN THE FAR INFRARED AND SUBMILLIMETRE REGIONS**
Leonardo Testi, ESO
- 12:30 **LUNCH BREAK**
- 14:30 **MISSION ANALYSIS AND TOOLS**
Etienne Montagnon, CNES
- 15:30 **COFFEE BREAK**
- 16:00 **DUST IN THE INTERSTELLAR MEDIUM AS A DIAGNOSTIC OF THE STAR FORMATION PROCESS**
Phlippe Andre, Laboratoire AIM Paris-Saclay
- 17:00 **WORKING TEAM MEETINGS**
- 19:00 **JOINT DINNER AT THE BÖGLERHOF**
- 21:00 **MISSION PREPARATION AT THE SCHOOL HOUSE**

THURSDAY, JULY 20

- 09:00 **FROM CIRCUMSTELLAR DISKS TO PLANETARY SYSTEMS:
How to measure disk structure, dust dynamics and dust growth**
Inga Kamp, Kapteyn Institute Groningen
- 10:00 **MOLECULES AND DUST IN THE INTERSTELLAR MEDIUM:
How do they relate**
Alexander Tielens, Leiden Observatory
- 11:00 **COFFEE BREAK**
- 11:30 **IMPROVING ON PREVIOUS MISSIONS - WHAT ARE THE MAIN CHALLENGES?**
Dieter Lutz, Max Planck Institute for Extraterrestrial Physics, Garching
- 12:30 **LUNCH BREAK**
- 14:30 **MISSION ANALYSIS TOOL TUTORIAL**
Etienne Montagnon, CNES
- 15:30 **WORKSHOP**
- 16:30 **COFFEE BREAK**
- 17:00 **WORKSHOP**
- 19:00 **JOINT DINNER AT THE BÖGLERHOF**
- 21:00 **MISSION PREPARATION AT THE SCHOOL HOUSE**

FRIDAY, JULY 21

09:00 **INSTRUMENTATION I**

Ralf Srama, University of Stuttgart

10:00 **CRYOGENIC INFRARED INSTRUMENTS FOR SCIENTIFIC MISSIONS**

Martin Linder, ESA

11:00 **COFFEE BREAK**

11:30 **SYSTEM ENGINEERING & TECHNOLOGY**

Peter Falkner, ESA

12:30 **LUNCH BREAK**

14:30 **WORKSHOP**

16:00 **COFFEE BREAK**

16:30 **MISSION OBJECTIVES AND OBSERVATIONS REQUIREMENTS REVIEW**

19:00 **JOINT DINNER AT THE BÖGLERHOF**

21:00 **MISSION PREPARATION AT THE SCHOOL HOUSE**

SATURDAY JULY 22

09:00 – 16:00 GUIDED MOUNTAIN WALK

A guided mountain walk is organised for interested participants. Good shoes are necessary.



17:00 MISSION PREPARATION AT THE SCHOOL HOUSE

19:00 JOINT DINNER AT THE BÖGLERHOF

21:00 MISSION PREPARATION AT THE SCHOOL HOUSE

SUNDAY, JULY 23

MISSION PREPARATION AT THE SCHOOL HOUSE

19:00 JOINT DINNER AT THE BÖGLERHOF

21:00 MISSION PREPARATION AT THE SCHOOL HOUSE

MONDAY, JULY 24

09:00 **LABORATORY STUDIES OF COSMIC DUST**

Thomas Henning, Max Planck Institute for Astronomy, Heidelberg

10:00 **DUST IN THE SOLAR SYSTEM – IN SITU OBSERVATIONS**

Ralf Srama, University of Stuttgart

11:00 COFFEE BREAK

11:30 **WORKSHOP**

12:30 LUNCH BREAK

14:30 **WORKSHOP**

15:00 COFFEE BREAK

16:30 **MISSION PRELIMINARY DESIGN REVIEW**

19:00 JOINT DINNER AT THE BÖGLERHOF

21:00 MISSION PREPARATION AT THE SCHOOL HOUSE

THURSDAY JULY 25

09:00 MISSION PREPARATION AT THE SCHOOL HOUSE

16:30 **MISSION FINAL DESIGN REVIEW**

19:00 JOINT DINNER AT THE BÖGLERHOF

21:00 MISSION PREPARATION AT THE SCHOOL HOUSE

WEDNESDAY, JULY 26

09:00 MISSION PREPARATION AT THE SCHOOL HOUSE

16:00 **INDIVIDUAL TEAM REHEARSALS**

19:00 JOINT DINNER AT THE BÖGLERHOF

21:00 MISSION PREPARATION AT THE SCHOOL HOUSE

THURSDAY, JULY 27

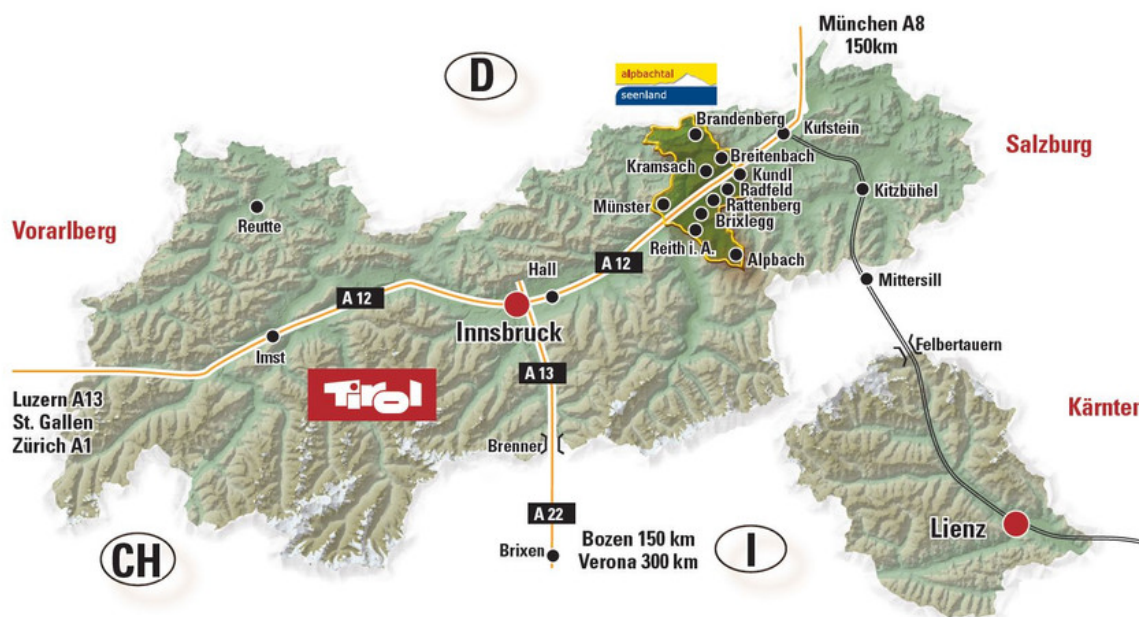
00:00	LATEST DELIVERY OF PRESENTATION MATERIAL "Bed time"
09:00	PRESENTATION TEAM A *
10:00	Question and Answer Period
10:30	COFFEE BREAK
11:00	PRESENTATION TEAM B *
12:00	Question and Answer Period
12:30	BUFFET LUNCH SERVED AT THE SCHOOL HOUSE
13:30	PRESENTATION TEAM C *
14:30	Question and Answer Period
15:00	COFFEE BREAK
15:30	PRESENTATION TEAM D *
16:30	Question and Answer Period
17:00	CLOSING REMARKS BY PETER FALKNER, HEAD TUTOR
17:15	MEETING OF THE JURY
19:30	FAREWELL DINNER & ANNOUNCEMENT OF JURY EVALUATION AT THE BÖGLERHOF

* NOTE: team presentation sequence defined by lucky draw

THE VILLAGE OF ALPBACH



Alpbach occupies a beautiful location on a sunny plateau at approx. 1.000m above sea level. Thanks to its homogenous architectural style and lovely floral decorations Alpbach was voted "Austria´s most beautiful village".



- ➔ 50 km from Innsbruck
- ➔ 150 km from Munich
- ➔ 140 km from Salzburg
- ➔ 160 km from Bozen
- ➔ 440 km from Vienna

- ➔ reach Alpbach by car on the Inntal motorway A1, exit Kramsach - 12 km to Alpbach via Brixlegg and Reith
- ➔ nearest mainline railway stations: Wörgl (25 km) and Jenbach (20 km)
- ➔ fly into Innsbruck, Salzburg or Munich

Express trains (ICE, IC, EC) stop at the express train stations Jenbach or Wörgl. Regional trains stop at the Brixlegg or Rattenberg stations.

Guests arriving by train to Wörgl or Jenbach or Brixlegg can use the buses to Alpbach free of charge by producing a valid booking confirmation or accommodation voucher. For train connections see <http://fahrplan.oebb.at/bin/query.exe/en>

LOGISTICS

HOTEL BÖGLERHOF

Familie Duftner
Nr. 166, 6236 Alpbach
Telefon +43 5336 5227
www.boeglerhof.at
info@boeglerhof.at



The Hotel Böglerhof is the Summer School Hotel. It is located in the centre of Alpbach, next to the church and within 10 minutes walking distance from the School House.

Joint dinners for all Summer School participants help in forming a strong community spirit. All participants (students, tutors, lecturers and accompanying persons) will have dinners throughout the period of the Summer School at the Hotel Böglerhof.

Vouchers for the dinners including one free drink per evening will be distributed to all Summer School students upon registration.

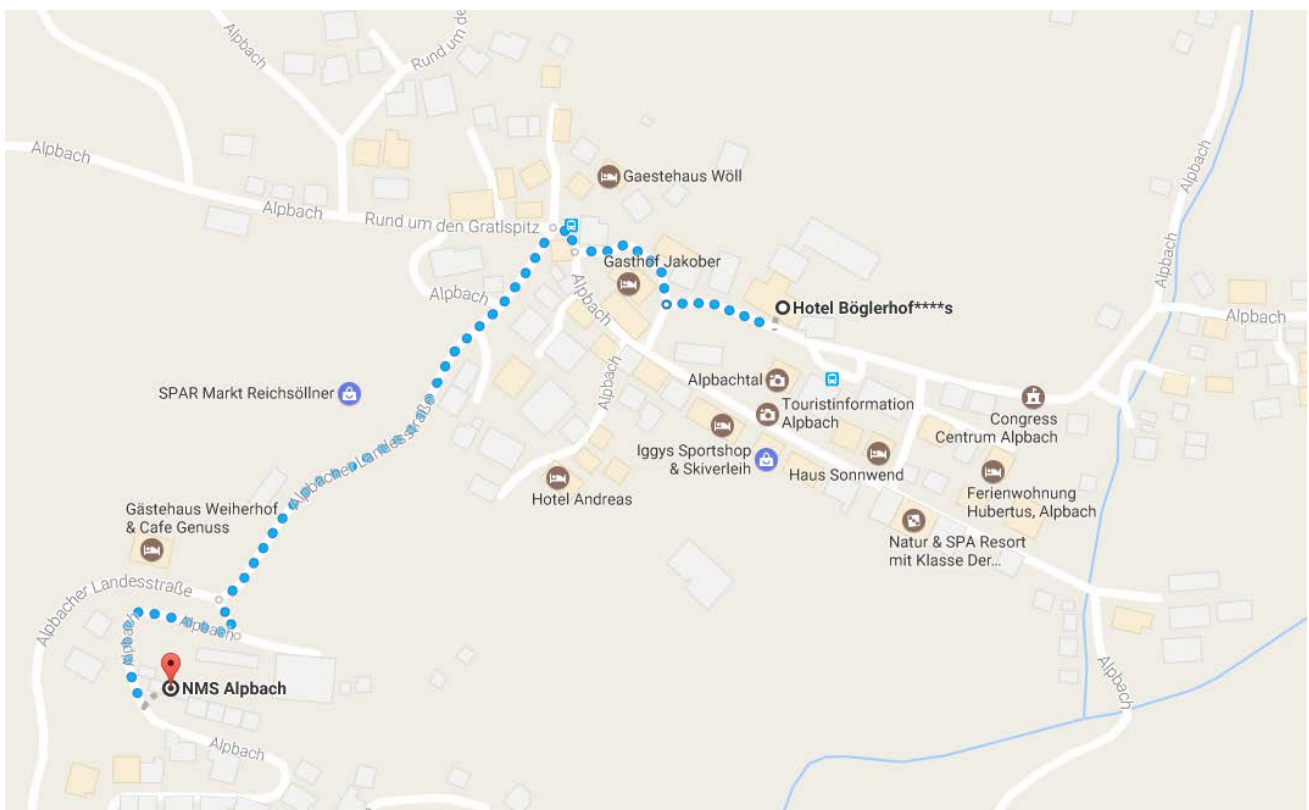
Lecturers and tutors staying at the Böglerhof have dinners included in the room arrangement.

The price for the evening meal at the Hotel Böglerhof for persons who are not staying at the Böglerhof is € 24 per evening and can be paid at the end of the stay.

Accompanying persons are welcome to join.



THE SCHOOL HOUSE



All lectures and the workshops are held in the School House of Alpbach (NMS Alpbach) located at 10 minutes walking distance to the Hotel Böglerhof. There are no lectures during the weekend. The mission design work continues and the School House will be open for work.

Lectures, final student presentations and student rehearsals will take place in the lecture hall (audimax). 60 Alpbach students will be grouped into four teams (Blue, Red, Orange, Green). Each Summer School student team will be allocated a classroom.

The daily joint dinners are scheduled for 7 p.m. at the Hotel Böglerhof. The workshop activities continue after dinner at the School House.

INFRASTRUCTURE AVAILABLE AT THE SCHOOL HOUSE

- Access to the internet: 1 fixed Notebook allocated to each team (with LAN) in the classrooms
- personal Notebooks (students)
- wireless access point (WiFi)
- 1 classroom per team (flip charts, chalkboard, beamer, WiFi, 1 Laptop)
- Computer Room (team laptops, printers, library)
- Copying machine

MATERIAL AVAILABLE FOR THE USE OF STUDENTS

- Books (small library) & reports
- Internet Address Lists
- Server for uploading information material/tools of tutors and lecturers and for exchange between students
- Mission Analysis tool CelestLab (an open source SciLab toolbox developed by CNES for Space Mechanics)

COFFEE BREAKS

Coffee breaks take place at the School House and each team will be provided with a coffee machine in the classroom.



LUNCH

There are no arrangements for lunch, a supermarket is within walking distance from the School House and small restaurants and a coffee shop can be found in the village of Alpbach.

THE PROGRAMME COMMITTEE

CHAIR:

Wolfgang Baumjohann, Space Research Institute/Austrian Academy of Sciences

SUMMER SCHOOL DIRECTOR: Michaela Gitsch

VICE SUMMER SCHOOL DIRECTOR: Wolfgang Baumjohann

HEAD TUTOR: Peter Falkner, ESA

SCIENTIFIC COORDINATOR: Hans Sünkel, Technical University Graz

CHAIRMAN OF THE JURY: Roger Bonnet, ISSI

PROGRAMME COMMITTEE MEMBERS:

Paal Brekke, Norway

Natacha Callens, ESA

Vassilis Charmandaris, Greece

Enrico Flamini, ASI

Andreas Geisler, FFG

Christian Gritzner, DLR

Manuel Güdel, Austria

Olivier La Marle, France

Mark McCaughrean, ESA

Créidhe O'Sullivan, Ireland

Johannes Ortner, Austria

Russell Shipman, The Netherlands

Jose Carlos del Toro Iniesta, Spain

Clemens Plank, DLR

Stephan Ulamec, Germany

Christoffel Waelkens, Belgium

SUMMER SCHOOL ADMINISTRATION: Silvia Wenger, ISSI

TECHNICAL MANAGEMENT: Christoph Bletzacher, Alpbach

PHOTOGRAPHER: Michel A. Jakob, Austria

SUMMER SCHOOL TUTORS

HEAD TUTOR: Peter Falkner, ESA

ENGINEERING TUTORS:

- Günter Kargl, Space Research Institute Graz
- Luzius Kronig, EPFL Lausanne
- Anton Ivanov, EPFL Lausanne
- Martin Linder, ESA/ESTEC
- Etienne Montagnon, CNES
- Carsten Scharlemann, Fachhochschule Wiener Neustadt
- Clemens Plank, DLR
- Jaan Praks, Aalto University
- Stephan Ulamec, DLR
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SCIENCE TUTORS:

- Vera Konyves, Département d'Astrophysique - Laboratoire AIM Paris-Saclay
- Kieran Leschinski, Institute of Astrophysics, University Vienna
- Dieter Lutz, Max Planck Institute for Extraterrestrial Physics, Garching
- Theresa Lüttinger, Institute of Astrophysics, University Vienna
- Michael Mach, Institute of Astrophysics, University Vienna
- Marc Sauvage, CEA Saclay
- Russel Shipman, Space Research Organisation of the Netherlands (SRON)

SUMMER SCHOOL LECTURERS

- Philippe Andre, Département d'Astrophysique - Laboratoire AIM Paris-Saclay
- Mike Barlow, University College London
- Thomas Henning, Max Planck Institute for Astronomy, Heidelberg
- Peter Falkner, ESA
- Inga Kamp, Kapteyn Institute Groningen
- Martin Linder, ESA
- Dieter Lutz, Max Planck Institute for Extraterrestrial Physics, Garching
- Etienne Montagnon, CNES
- Marc Sauvage, CEA Saclay
- Ralf Srama, University of Stuttgart
- Leonardo Testi, ESO
- Alexander Tielens, Leiden Observatory
- Christoffel Waelkens, University of Leuven

SUMMER SCHOOL JURY

JURY CHAIRMAN: ROGER BONNET, ISSI

JURY MEMBERS:

- Peter Falkner, ESA, Head Tutor (without voting right)
- Andreas Geisler, FFG
- Manuel Güdel, Institute of Astrophysics, University of Vienna, Austria
- Hugo Maree, ESA
- Hans Sünkel, Scientific Coordinator
- Sergio Volonté, ISSI
- Christoffel Waelkens, University of Leuven, Belgium

Summer School Oscars are awarded for the best projects in the categories

- THE SCIENCE CASE FOR THE MISSION
- THE TECHNICAL CASE FOR THE MISSION
- THE COMPETITIVENESS OF THE MISSION
- THE QUALITY OF PRESENTATION

Welcome to the Summer School Alpbach 2017