Meeting Etiquette:
All zoom links can be accessed by up to 100 participants, apart from the plenary session zoom link that has been set up to allow for up to 1000 participants (note: this has not been tested, and will be put to test if/once the plenary session participation exceeds 100).

When connecting to zoom, please note the following etiquettes:
- mute your microphone on entry;
- have the camera off if you are connecting as an individual;
- have the camera on if you are connecting from a room system, and there are multiple people in the room;
- virtually “raise your hand” through zoom options if you have a question (this will be monitored by the chair of each session);
- use the zoom chat if you have problems such as not being able to hear the speaker or see the slides, etc.;
- if there is no concern for coronavirus where you are, please share zoom connections if possible;
- if there is concern for coronavirus where you are, please take sensible measures, e.g. leaving a distance of 2m between individuals in a (meeting) room and connect to zoom individually if not able to use a room system;
- in a virtual meeting, it is even more important (than usual) to stick to your allocated time so everyone (including those not already connected) can rely on the schedule provided. The chair person of the session reserves the right to stop you if you go over time.

Plenary sessions – slides and re-scope
All Monday plenary speakers are requested to send their slides as soon as possible following their talks to Peter Roelfsema \( p.r.roelfsema@sron.nl \) and Shoko Jin \( s.jin@sron.nl \), so that these can be made available to the participants before the Science WG splinter sessions on Tuesday and Wednesday. Please also note that both Monday and Wednesday plenary sessions have been re-scoped significantly.

Summaries from parallel sessions
In order to keep the virtual meeting as effective as possible, the final plenary session on Wednesday has been significantly re-scoped. Science Working Group leads should prepare a one to three-slide summary, to be sent to Peter \( p.r.roelfsema@sron.nl \) and Shoko \( s.jin@sron.nl \) as soon as possible after the meeting for general distribution.

A note of thanks from the organisers
We would like to thank all participants of this meeting for your patience and understanding in the days leading up to this meeting. We appreciate that the uncertainties surrounding the fast-evolving situation with coronavirus at any given time has made it difficult for everyone who had registered for the meeting to know what the best course of action would be in the context of this meeting.

Thanks to the quick responses and strong support of many of our colleagues, also following the last-minute decision to re-scope this meeting from a face-to-face to a virtual meeting, we have been able to re-programme the meeting so as to (hopefully!) still make the best use of the availability of our 130+ colleagues who had set aside time for this SPICA Collaboration meeting. Some of the de-scoping and re-programming may mean that some topics will require dedicated follow-up telecons for further discussions. However, we very much hope that we can all make the best use of this virtual meeting with this timing, given the intense timeline for the SPICA Collaboration over the next few weeks and months.

We hope to see you all of you in a future meeting in person soon and, in the meantime, would like to thank you once again for your tremendous support during these interesting times!

Peter and Shoko
Monday 9 March: 13:00 – 17:00 CET / 21:00 – 01:00 JST / 05:00 – 09:00 PST  Plenary session

https://zoom.us/j/4544083043  
SRON 257

13:00–13:30  Opening, introduction – Peter Roelfsema

Logistics
Aims of the meeting
Summary of major mission changes: going vertical
SPICA Yellow Book: science introduction

13:30–15:00  SPICA Yellow Book: main science goals (on behalf of the Science WGs) – 15 min = 12+3 min
13:30 – 13:45 Galaxy Evolution (Juan Antonio Fernandez-Ontiveros)
13:45 – 14:00 Physics of Galaxies (Vianney Lebouteiller)
14:00 – 14:15 Planet Forming Systems (Inga Kamp/Hideko Nomura/Mitsuhiko Honda)
14:15 – 14:30 ISM and Star Formation (Andrea Bracco)
14:30 – 14:45 Solar System Objects and Exoplanets (Matt Griffin)
14:45 – 15:00 Discussion (chaired by Peter)

15:00–15:30  break

15:30–16:30  Summary of (major) SPICA project, mission, instrument changes
15:30 – 15:40 Agency context, plans, timeline - Jacques Rouquet, TBC/Astrid Heske/Toru Yamada, TBC
15:40 – 16:00 Configuration, cryogenics, payload – ESA/JAXA Jacques Rouquet TBC/Chihiro Tokoku
16:00 – 16:10 SAFARI - Peter Roelfsema
16:10 – 16:20 SMI - Hidehiro Kaneda
16:20 – 16:30 B-BOP - Vincent Revéret & Jérôme Martignac

16:30–17:00  Questions (from participants) + Conclusions / outlook for next two days

Tuesday 10 March: 09:00 – 12:30 CET / 17:00 – 20:30 JST / 01:00 – 04:30 PST
Parallel sessions for Science WGs and SAFARI team

Splinter A: Physics of Galaxies WG  https://zoom.us/j/429056021
Splinter B: Planet Forming Systems WG  https://zoom.us/j/4544083043
Splinter C: SAFARI team  https://zoom.us/j/4280161073
SRON 291

Splinter C.1: SAFARI team – Harness and Thermal SIA: JAXA, SAFARI (Tuesday 09:00 – 10:45 CET)
Splinter C.2: SAFARI team – Progress and plans (Tuesday 11:00 – 12:45 CET)

12:30–13:30  lunch

Tuesday 10 March: 13:30 – 17:00 CET / 21:30 – 01:00 JST / 05:30 – 09:00 PST
Parallel sessions for Science WGs and SAFARI team

Splinter D: Galaxy Evolution WG  https://zoom.us/j/429056021
Splinter E: ISM and Star Formation WG  https://zoom.us/j/876351844
Splinter C: SAFARI team  https://zoom.us/j/4280161073
SRON 291

Splinter C.2: SAFARI team – Progress and plans continued  13:30 – 15:30 CET
Splinter C.3: SAFARI team – FTSM: ABB, Lethbridge, SAFARI, CAB/INTA  16:00 – 17:00 CET
SPICA (virtual) Collaboration Meeting #3, 9-11 March 2020

Wednesday 11 March: 09:00 – 11:00 CET / 17:00 – 19:00 JST / 01:00 – 03:00 PST
Parallel sessions for Science WGs and SAFARI team

Splinter F: Joint Galaxy Evolution + Physics of Galaxies + ISM WG  https://zoom.us/j/4544083043

Splinter G: Solar System Objects and Exoplanets WG  https://zoom.us/j/429056021

11:00–11:30  break

Wednesday 11 March: 11:30 – 12:30 CET / 19:30 – 20:30 JST / 03:30 – 04:30 PST
Closing plenary session  https://zoom.us/j/4544083043
SRON 292 / de Jagerzaal Utrecht

11:30–12:00 – Clarification of WG questions on mission capabilities [*] – by instrument/mission experts
12:00–12:30 – Concluding remarks: forward look, plans/planning towards mission selection
   note: document delivery for mission selection process is February 2021!

12:30  Meeting closes

[*] WG leads to preferably collate questions in advance (during WG splinter sessions).

Wednesday 11 March: 13:00 – 14:30 – CET / 21:00 – 22:30 JST / 05:00 – 06:30 PST
SAFARI team splinter

Splinter C.4: SAFARI team – IFSI, all FPU electronic boards
Remote connection: Starleaf TBC - SRON 292 / de Jagerzaal Utrecht

Thursday 12 March: 09:00 – 12:30 – CET / 17:00 – 20:30 JST / 01:00 – 04:30 PST
SAFARI team splinter

Splinter C.5: SAFARI team – WFEE, Cal Source: ASIAA, SAFARI, CAB/INTA
Remote connection: Starleaf TBC - SRON 292 / Bleeker zaal

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Details of parallel sessions

**Splinter A: Physics of Galaxies WG**
Tuesday 09:00 – 12:30 CET - [https://zoom.us/j/429056021](https://zoom.us/j/429056021)

- 09:00 – 09:10 Introduction (Jesus Martin-Pintado)
- 09:10 – 09:30 Local galaxies: gas phases, star formation & related processes (Floris van der Tak)
- 09:30 – 09:45 Low metallicity galaxies (Vianney Lebouteiller)
- 09:45 – 10:00 SPICA to unveil properties of nearby extremely metal-poor galaxies (Lise Ramambason)
- 10:00 – 10:20 Detection of HD in low metallicity galaxies (Jonathan Braine)
- 10:20 – 10:40 Magnetic fields in galaxies (Annie Hughes & Rosita Paladino)

10:40 – 11:00 break

- 11:00 – 11:30 Formation & evolution of dust in galaxies (Frederic Galliano & Mikako Matsuura)
- 11:30 – 11:50 Diffuse gas in galaxies (Alberto Bolatto)
- 11:50 – 12:10 Observation strategy for the nearby galaxy Core Science Program (Hidehiro Kaneda)
- 12:10 – 12:30 General discussion: Yellow Book

**Splinter B: Planet Forming Systems WG**
Tuesday 09:00 – 12:30 CET - [https://zoom.us/j/4544083043](https://zoom.us/j/4544083043)

- 09:00 – 10:00 Reports from each work task (5+5 min each)
  - 09:00 – 09:10 Larger model parameter study for solid state features in PPDs/DDs to make our science robust (Rens Waters)
  - 09:10 – 09:20 Diagnostic line figure to discriminate jets/outflows/disks (Brunella Nisini)
  - 09:20 – 09:30 Check model predictions against existing observations and upper limits (Shota Notsu)
  - 09:30 – 09:40 Instrument simulations for SMI resolution (Shota Notsu)
  - 09:40 – 09:50 Simulate COMices in disks (Melissa McClure)
  - 09:50 – 10:00 HD mass diagnostic from line ratio and line flux of the low excitation line (David Fedele)

- 10:00 – 10:30 Changing instrument specifications, define retrieval tests to be done for yellow book, define questions for instrument teams (for Wednesday instrumentation Q&A session)

10:30 – 11:00 break

- 11:00 – 11:10 Basic observing modes and required times (Mitsuhiko Honda, 5+5 min)
- 11:10 – 11:20 Target selection (Pablo Riviere Marichalar)
- 11:20 – 12:00 Discussion of core mission (target selection, observing strategies, time estimates, visibility)

12:00 – 12:30 Discussion of Yellow Book (fix key science and identify key figures), structure and timeline

**Splinter D: Galaxy Evolution WG**
Tuesday 13:30 – 17:00 CET - [https://zoom.us/j/429056021](https://zoom.us/j/429056021)

- 13:30 – 15:00 (10x8=80 mins) WP1–WP8
  - 13:30 – 13:40 WP1Star formation and Black Hole accretion along cosmic time (Alberto Franceschini & Luigi Spinoglio)
  - 13:40 – 13:50 WP2 - Feeding and feedback in galaxies (Miguel Pereira-Santaella)
  - 13:50 – 14:00 WP3 - The rise of metals and dust (Juan Fernandez-Ontiveros)
  - 14:00 – 14:10 WP4 - Cosmic star-formation history: from cosmic noon to cosmic dawn (Carlotta Gruppioni)
  - 14:10 – 14:20 WP5 - Clustering: connection with environment and proto-clusters (Helmut Dannerbauer)
  - 14:20 – 14:30 WP6 - Spectroscopy of high-z galaxies/quasars (Eiichi Egami & Andrea Pallottini)
  - 14:30 – 14:40 WP7 - Galaxy polarization and its dependence with galaxy properties & environment (Mathieu Béthermin & Luiz Felipe Rodrigues)

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14:40 – 15:20 - Discussion and short break

15:20 – 15:30 WP8 – Dark matter and Clustering: Asantha Cooray

15:30 – 16:20 (5x8=40 mins) TWP1–TWP8
  15:30 – 15:35 TWP1 - Modeling for SPICA (Laura Bisigello)
  15:35 – 15:40 TWP2 - Synergies with X-rays e.g. Athena (Cristian Vignali)
  15:40 – 15:45 TWP3 - Synergies with ALMA (Roberto Decarli)
  15:45 – 15:50 TWP4- Synergies with JWST (Pablo G. Pérez-González & Eiichi Egami)

15:50 – 16:05 break

16:05 – 16:10 TWP6 - Synergies with radio: SKA precursors, etc. (Dave Clements)
16:10 – 16:15 TWP7 – Synergies with Euclid (Stephen Serjeant)
16:15 – 16:20 TWP8 – Synergies with gravitational waves facilities (Myrto Symeonidis)

16:20 – 17:00 - General discussion
17:00 – 18:00 - Scheme to be presented on the day after joint splinter with Local Galaxies WG

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**Splinter E: ISM and Star Formation WG**  
Tuesday 13:30 – 17:00 CET - [https://zoom.us/j/876351844](https://zoom.us/j/876351844)

Aims: clarify science requirements and justification of targets/sample size (i.e. not repeating science discussions in detail), and discuss strategies for reducing observing time as much as possible by sharing observations. Time allocation: 15 minutes for each presentation, including discussions.

1. Status report
2. Core science programme discussions
3. Extra/new science cases

13:30 – 13:40  1. Status report (Takashi Onaka / MS)
13:40 – 13:55  2.1 Magnetic field and star-formation updates (Philippe Andre)
13:55 – 14:10  2.2 Observations of Intermittency (Pierre Lesaffre)
14:10 – 14:25  2.3 Large scale mapping of B and cooling lines (Sylvain Bontemps)
14:25 – 14:40  2.4 SPICA requirements for FHC and YSOs observations (Brunella Nisini)
14:40 – 14:55  2.5 Magnetic fields and early evolution in Galactic filamentary massive star formation (Sergio Molinari)
14:55 – 15:10  2.6 Dust physics with B-BOP (Vincent Guillet)

15:10 – 15:25  Virtual coffee break

15:25 – 15:40  3.1 Transient observations (Doug Johnstone)
15:40 – 15:55  3.2 Star-formation feedback from core to cloud scales (Odysseas Dionatos)
15:55 – 16:06  3.3 Molecular cloud formation to the IMG (Fabien Louvet)
16:05 – 17:00  Discussion

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Splinter F: Joint Galaxy Evolution + Physics of Galaxies + ISM WG

Wednesday 09:00 – 11:00 CET - https://zoom.us/j/4544083043

09:00 – 9:10 Introduction (Juan Antonio & Vianney)
09:10 – 9:30 Feedback & quenching (Eckhard Sturm & Jesus Martin-Pintado)
09:30 – 9:50 Star formation (Luigi Spinoglio & Floris van der Tak)
09:50 – 10:10 Dust formation and evolution (Francesco Calura & Frederic Galliano)
10:10 –10:30 The role of the multiphase ISM in the high-z Universe (Tohru Nagao, TBC & Vianney Lebouteiller)
10:30 –11:00 Towards the Yellow Book (Peter Roelfsema)

Splinter G: Solar System Objects and Exoplanets WG

Wednesday 09:00 – 11:00 CET – https://zoom.us/j/429056021

09:00 – 09:10 Introduction (Matt Griffin)
09:10 – 10:10 Exoplanets
   Introduction: key issues and tasks (Matt Griffin) - 5 min
   Short presentations - 30 min
      - SMI transmission spectroscopy for atmospheric characterizations of exoplanets (Yui Kawashima & Kazumasa Ohno)
      - Direct spectroscopy of thermal emission light from exoplanets (Yuka Fujii)
      - Infrared observations of dusty tails of disintegrating planets (Ayaka Okuya)
      - SPICA exoplanet science: progress in Europe (Alessandro Sozzetti)
   Next steps and actions - 10 min
10:10 –11:00 Solar system
   Introduction: key issues and tasks (Matt Griffin) – 10 min
   Short presentations (TBD)
   Discussion/sub-group summaries
      - Comets
      - Atmospheres
      - Solid bodies
      - Zodi
   Next steps and actions
Splinter C: SAFARI team 
Tuesday 09:00 – 17:00 CET - https://zoom.us/j/4280161073, SRON 291

Splinter C.1: SAFARI team – Harness and Thermal SIA: JAXA, SAFARI 
09:00 – 10:45 Harness and Thermal SIA (JAXA, SAFARI)

10:45 – 11:00 break

Splinter C.2: SAFARI team – Progress and plans
11:00 – 11:55 SAFARI system level (lead: Willem Jellema)
11:00 – 11:20 Optical FPU – double deck (Willem Jellema)
11:20 – 11:35 Mechanical FPU – double deck (Martin Eggens)
11:35 – 11:55 Mass savings result and implications (Willem Jellema)

11:55 – 12:40 SAFARI subunits (lead: Willem Jellema)
11:55 – 12:10 Optical 2.0 (Luis González)
12:10 – 12:25 FPU mechanical including GM 2.0/3.0 (Josefina Torres)
12:25 – 12:40 Instrument modelling and optical coupling (Diane Kozlova, Bram Lap)

12:45 – 13:30 lunch

13:30 – 14:30 SAFARI subunits continued – talks: 12 minutes each unless specified otherwise
CSA (Shiang-Yu Wang)
ICU (Anna de Giorgio)
MSM (Jean-Yves Plesseria)
FTSM development (Alain Cournoyer)
FTS-System tests (David Naylor) – 7 min

14:30 – 15:25 Detector system (lead: Gert de Lange) – talks: 12 minutes each unless specified otherwise
Introduction and plan (Gert de Lange)
Progress in UK (Pete Hargrave, Matt Griffin, David Goldie) – 17 min
Progress at JPL (Matt Bradford)
SRON FDM development (Qian Wang)

15:25 – 15:40 Project Plans – timelines, issues, outlook (Pieter Dieleman)

15:40 break

Splinter C.3: SAFARI team – FTSM: ABB, Lethbridge, SAFARI, CAB/INTA
16:00 – 17:00 FTSM (ABB, Lethbridge, SAFARI, CAB/INTA)

Splinter C.4: SAFARI team – FPU boards in ICU: IFSI, all FPU electronic boards
Wednesday 13:00 – 14:30 CET – Remote connection: Starleaf TBC SRON 292 /de Jagerzaal

Splinter C.5: SAFARI team – WFEE, Cal Source: ASIAA, SAFARI, CAB/INTA
Thursday 09:00 – 12:30 CET - Remote connection: Starleaf TBC SRON 292 /Bleeker zaal

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Zoom links overview + SRON rooms

Monday plenary 13:00 – 17:00 CET
https://zoom.us/j/4544083043, SRON room: 257

Splinter A: Physics of Galaxies WG - Tuesday 09:00 – 12:30 CET
https://zoom.us/j/429056021

Splinter B: Planet Forming Systems WG - Tuesday 09:00 – 12:30 CET
https://zoom.us/j/4544083043

Splinter C.1: SAFARI team – Harness and Thermal SIA: JAXA, SAFARI - Tuesday 09:00 – 10:45 CET
Splinter C.2: SAFARI team – Progress and plans - Tuesday 11:00 – 15:30 CET
Splinter C.3: SAFARI team – FTSM: ABB, Lethbridge, SAFARI, CAB/INTA - Tuesday 16:00 – 17:00 CET
https://zoom.us/j/4280161073, SRON 291 (Groningen)

Splinter D: Galaxy Evolution WG - Tuesday 13:30 – 17:00 CET
https://zoom.us/j/429056021

Splinter E: ISM and Star Formation WG - Tuesday 13:30 – 17:00 CET
https://zoom.us/j/876351844

Splinter F: Joint Galaxy Evolution + Physics of Galaxies + ISM WG - Wednesday 09:00 – 11:00 CET
https://zoom.us/j/4544083043

Splinter G: Solar System Objects and Exoplanets WG - Wednesday 09:00 – 11:00 CET
https://zoom.us/j/429056021

Wednesday plenary - 11:30 – 12:30 CET
https://zoom.us/j/4544083043, SRON room: 291

Splinter C.4: SAFARI team – FPU boards in ICU: IFSI, all FPU electronic boards - Wednesday 13:00 – 14:30 CET
https://zoom.us/j/4280161073, SRON room: 292 (Groningen), de Jagerzaal (Utrecht)

Splinter C.5: SAFARI team – WFEE, Cal Source: ASIAA, SAFARI, CAB/INTA - Thursday 09:00 – 12:30 CET
Remote connection: Starleaf TBC, SRON room: 292 (Groningen), Bleeker zaal (Utrecht)