

ESS Spectroscopy division



Current STAP members:

Georg Ehlers

Astrid Schneidewind

Andrew Boothroyd

Markus Appel

Monica Jimenez

Michaele Zamponi

Andrea Piovano

PASCALE DEEN
DIVISION HEAD

Scientific and technical advisory panel.

Purposes:

The Science and Technical Advisory Panels (STAPs) are established to provide independent, expert advice and guidance on scientific, technical and policy matters related to ESS's Science Directorate. The panel aims to ensure the highest standards of scientific and technical integrity, fostering innovation and facilitating the achievements of strategic goals.

Charge:

- Comment on the information provided during the STAP common sessions.
- Comment on the progress of the instrument construction projects.
- Comment on the readiness of ESS software to support the user programme including controlling the instruments and enabling data reduction and analysis.
- Comment on the provision of appropriate sample environments for the instruments.
- Advice the Science Directorate strategy towards first science and the user community.
- Advice on the progress towards selection of instruments 16-22 on science relating to your special interest.

Spectroscopy Scientific and Technical Advisory Panel (STAP).
October 2024.



The charge to the STAP will be to advice on the following points.

- (1) The task of rescoping the instrument projects continues and this is a crucial exercise to ensure that ESS instruments will be competitive. We will present a list of rescoping and ask the STAP to provide feedback on our prioritisations.

- (2) First science and how we organise early scientific experiments will be crucial to the success of ESS. Identifying which experiments should be the first to be performed on the different instruments is key to being able to pronounce the ESS a success in the early years of operations. Several aspects need to be considered and balanced against one another in this process: what is needed to gradually verify instrument performance; openness and inclusiveness to the community while at the same time remaining engaged with the in-kind partners; and scientific excellence. We ask the STAP to comment on current ideas for instrument commissioning and first science for the instruments, as much as possible.

Spectroscopy division: Rescoping priorities

PA not considered

Sample environment considered in the Scientific support division.



| Instrument | Rescoping option | A: Scientific Impact (5: high, 1: low) | B: Manpower (1: high, 5: low) | C: Technical Risk (1: high, 5: low) | B: Cost | FOM: A*B*C |
|------------|---|--|---|-------------------------------------|---------------------------|------------|
| MIRACLES | Complete Analyser/collimator/detector coverage Si (1 1 1) & (3 1 1) | 2 | Can be included and delivered within current instrument construction: 2 | 5 | 1.67 M€ | 20 |
| CSPEC | ³ He full detector coverage (2.5 bar) | 5 | Minimal: 5 | 5 | 2.025 M€ | 125 |
| CSPEC | ³ He full detector coverage (5 bar) | 2 | Minimal: 5 | 5 | +4.375 M€ | 50 |
| T-REX | Full detector coverage | 5 | Significant (Detector group) 2 | 4 | >5 M€ | 40 |
| T-REX | Extra blades for P chopper | 2 | Julich chopper group: 3 | 2 | 0.5 M€ | 12 |
| T-REX | T0 chopper | x | x | x | 0.85 M€ | ? |
| VESPA | T0 chopper | 5 | Some (Chopper group) 4 | 4 | 0.85 M€ | 80 |
| VESPA | Increase analyser modules | 4 | Can be included and delivered within current instrument construction: 4 | 4 | 3.6 M€ for 10 (0.36 each) | 64 |

Spectroscopy division: Rescoping priorities

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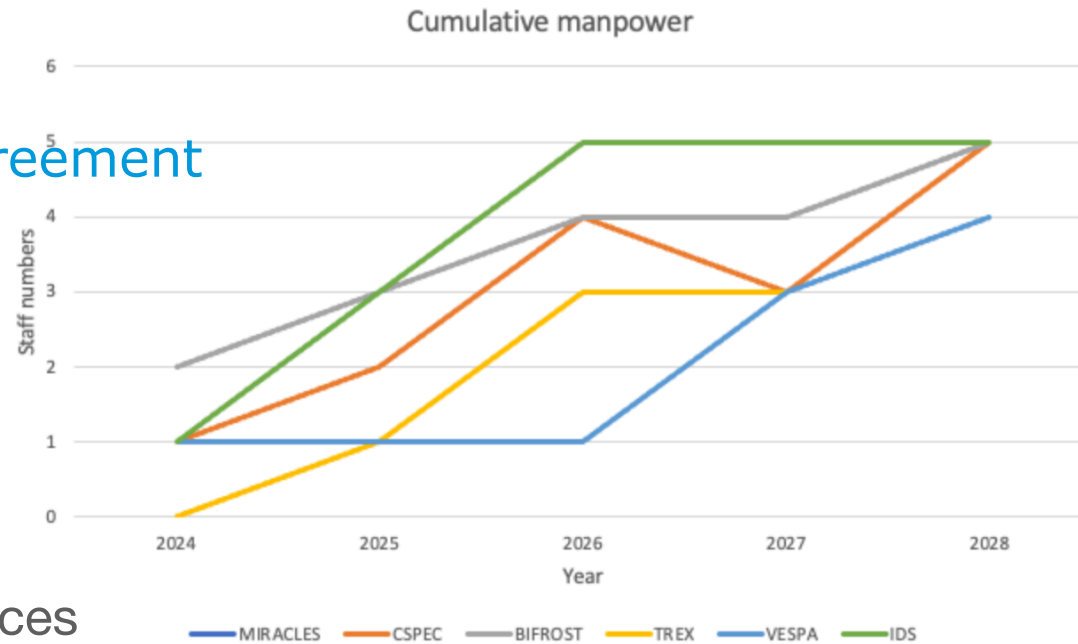


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List to SAC

1. FREIA shutters
2. DREAM full coverage detectors
3. VESPA T0 chopper
4. CSPEC ³He 2.5bar (full detector coverage)
5. HEIMDAL detectors
6. VESPA analyser modules
7. ESTIA miscellaneous elements
8. T-REX full coverage detector
9. MAGiC detector coverage
10. BEER texture detectors
11. BEER multiplication choppers
12. ODIN grating interferometry

Spectroscopy division Staffing expectation (on-site): Contingent on SSO Review & Council agreement



Ensure concomitant onsite engineering resources

| | | 2024 | | | | | | 2028 | | | | | |
|--|----------|----------------------|-------------|-------------|-----|---------------|----------------|-------------|-------------|-------------|-----|---------------|----------------|
| Instrument | TG5 Date | Scientist 1 | Scientist 2 | Scientist 3 | IOE | Post-Doc | Data scientist | Scientist 1 | Scientist 2 | Scientist 3 | IOE | Post-Doc | Data Scientist |
| MIRACLES | Q2 2027 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 |
| CSPEC | Q1 2027 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| BIFROST | Q3 2025 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| TREX | Q2 2027 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 |
| VESPA | Q1 2028 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 |
| Spin echo | ?? | | | | | | | | | | | | |
| Bold means Q3/4 | | Red is inkind | | | | | | | | | | | |
| Data Scientist | | | | | | | | | | | | | |
| Total for year | | | | | | Spec Division | 4 | | | | | Spec Division | 22 |
| Note: VESPA Scientist 2 can be a computational material scientist. | | | | | | IDS | 1 | | | | | IDS | 5 |
| Note: Bifrost scientist 2 is in-kind from KU | | | | | | | | | | | | | |



| | | | | |
|--------------|---------|--|-------|---|
| 09:00 | → 09:15 | Overview and charge | 🕒 15m | ✎ |
| | | Speaker: Pascale Deen (European Spallation Source ERIC) | | |
| 09:15 | → 10:00 | MIRACLES Overview | 🕒 45m | ✎ |
| 10:00 | → 10:45 | CSPEC Overview | 🕒 45m | ✎ |
| 10:45 | → 11:05 | Coffee | 🕒 20m | |
| 11:05 | → 11:50 | TREX Overview | 🕒 45m | ✎ |
| 11:50 | → 12:50 | Lunch & visit to E01 | 🕒 1h | |
| 12:50 | → 13:35 | VESPA Overview | 🕒 45m | ✎ |
| 13:35 | → 14:20 | BIFROST Overview | 🕒 45m | ✎ |
| 14:20 | → 15:00 | Data work flow for Bifrost | 🕒 40m | ✎ |
| 15:00 | → 15:20 | Coffee | 🕒 20m | |
| 15:20 | → 15:50 | Closed session | 🕒 30m | ✎ |
| 15:50 | → 16:05 | Overview of STAP considerations to instrument teams | 🕒 15m | ✎ |



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