Обзор докладов

Участники

Статистика

- 82 абстракта подано
- 58 статей подано окончательно
- 79 участников
- Сессии
  - Управление
  - Созвездия спутников
  - Миссии
  - Динамика
  - Бесконтактное управление
  - Лабораторные стенды
  - Датчики и средства определения движения группы

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Сессия Constellation

- MMS
- Исследование Марса – сложности с передачей данных
- Автосборка кубсатов и роботы by prof. Schilling
- Равномерное распределение спутников по орбите для ДЗЗ, расчёт манёвров
- Выбор орбитальных элементов особого вида для более удобного/продуктивного расчёта

Robotics For Efficient Production Of Satellite Constellations

modular satellite **bus architecture** to support flexible integration in production

close worker / robot cooperation for efficient satellite system integration

flexible flow of materials between integration and testing areas by transport robots

integrated automated tests for functionality and performance of the satellite

Figure 3. The industry 4.0 demonstrator in Würzburg with combined integration and test facilities, applied here to the example of a flexible small satellite assembly line.

Flight Dynamics Operations and Collision Avoidance for the Terra Bella Imaging Constellation

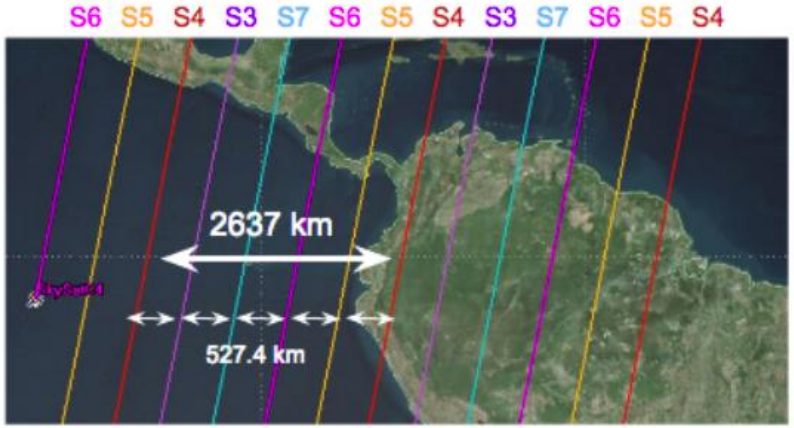


Figure 5. Five SkySats with a ground swath of 585 km covers the fundamental interval

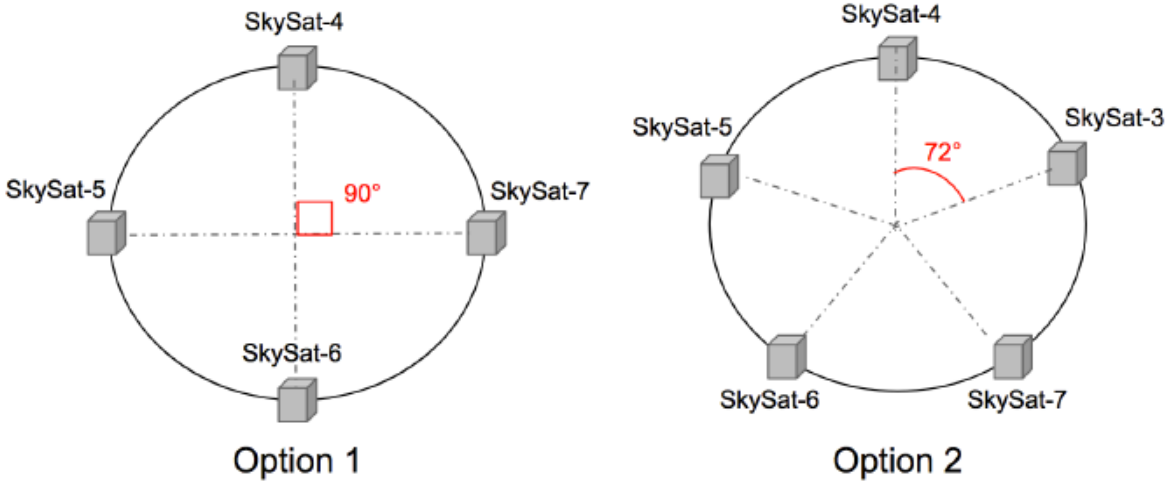


Figure 3. Phasing options for the SkySat constellation

Сессия Mission

- IRASSI – расчёт геометрии и динамики вокруг L2
- AVANTI – навигация по камере и подлёт к пассивному телу
- MMS – динамика
- Canx-4 и Canx-5 – наноспутники на расстоянии до 50м с ошибкой меньше метра
- PROBA-3 – описание миссии
- Canyval-X – управление на основе аэродинамики
- VTXO, TOM и другие

In-Orbit Experience and Lessons Learned from the AVANTI Experiment

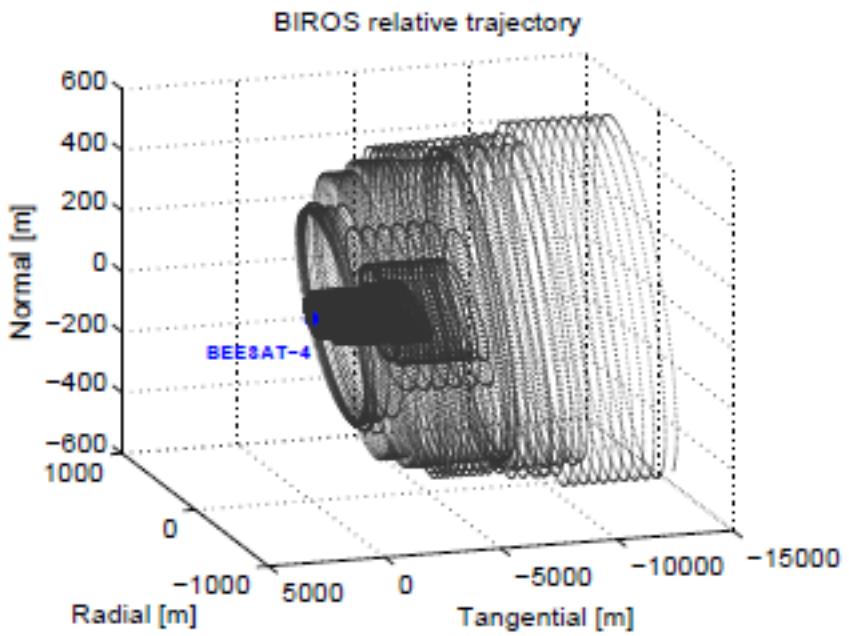


Figure 5: BIROS relative trajectory during the close-range commissioning phase in the BEESAT-4 orbital frame.

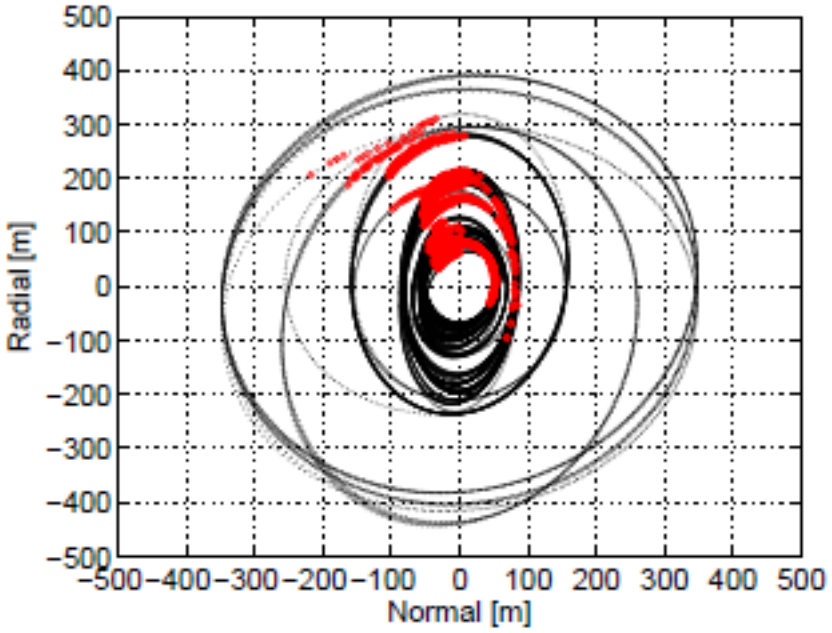


Figure 10: BEESAT-4 relative trajectory during the close-range commissioning phase.

Satellite Formation Flight Results from Phase 1 of the Magnetospheric Multiscale Mission

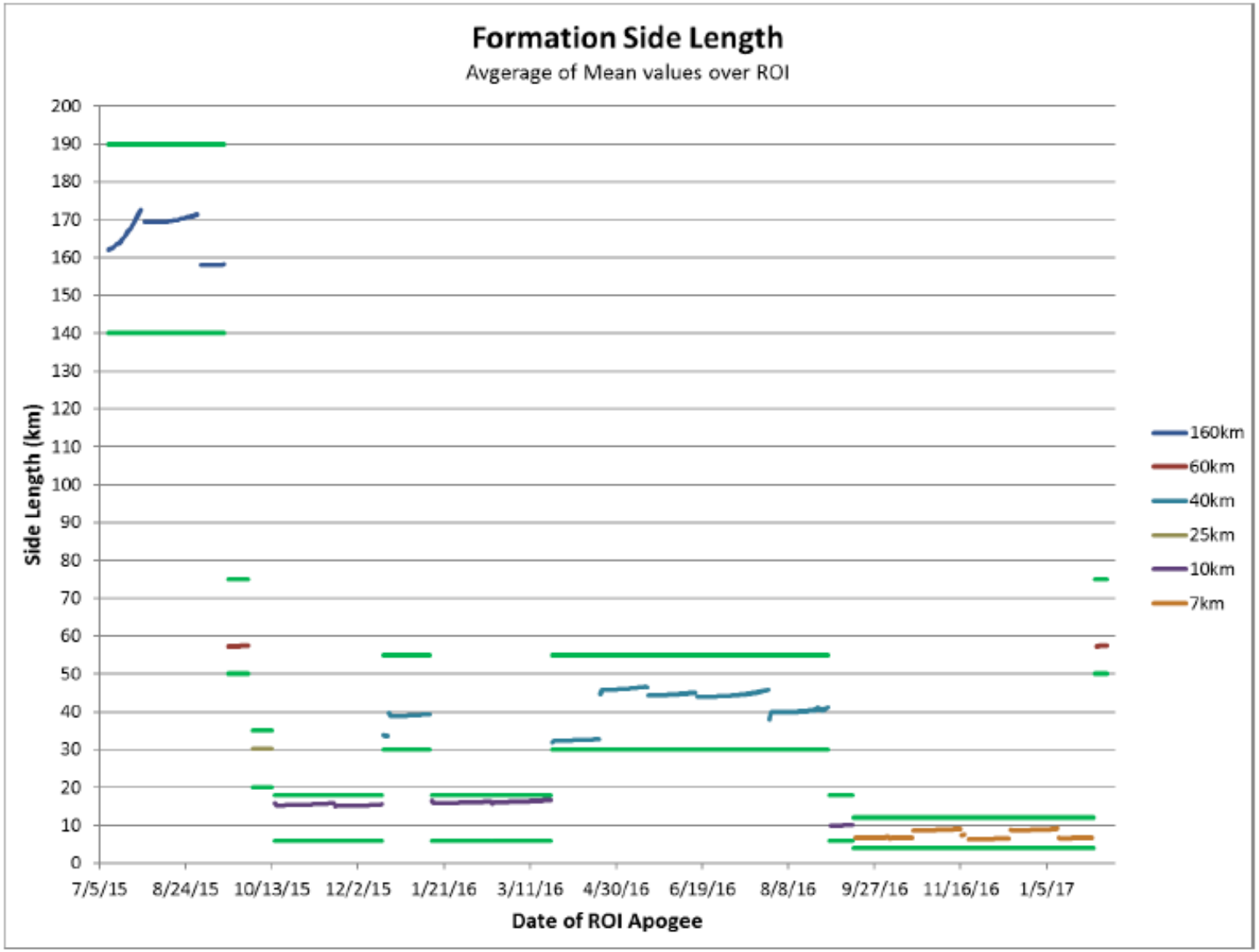


Figure 5. Evolution of Mean Sidelength Averaged Over RoI, Launch to Phase 2a.

Satellite Formation Flight Results from Phase 1 of the Magnetospheric Multiscale Mission

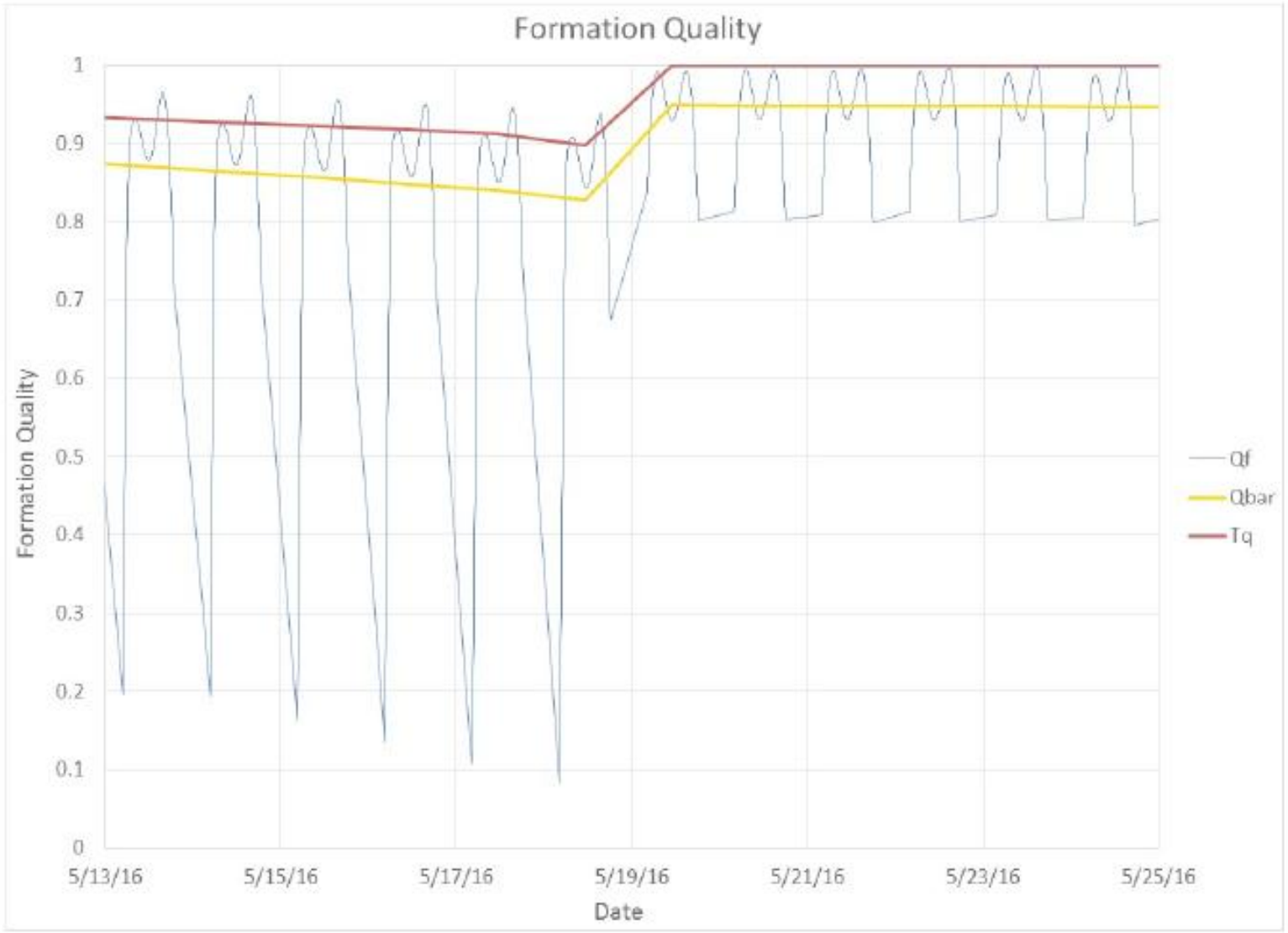


Figure 2. Quality Factor Evolution, Two 40 km Formations.

Сессия Control

- Расчёт управления для стыковки кубсатов
- Уборка мусора с помощью кубсатов
- Навигация кубсатов за пределами LEO
- Скользящее управление
- Управление с помощью атмосферы – разведение 88 спутников
- FF в точках либрации

Differential-drag control scheme for large constellation of Planet satellites and on-orbit results

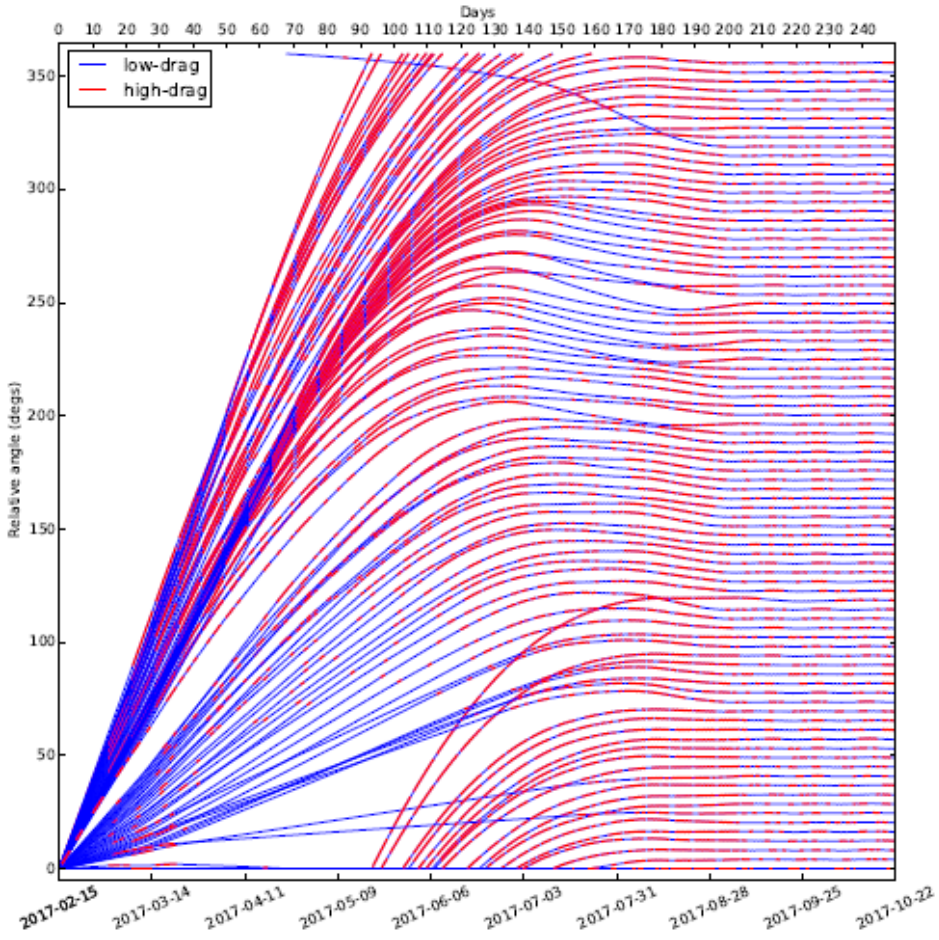
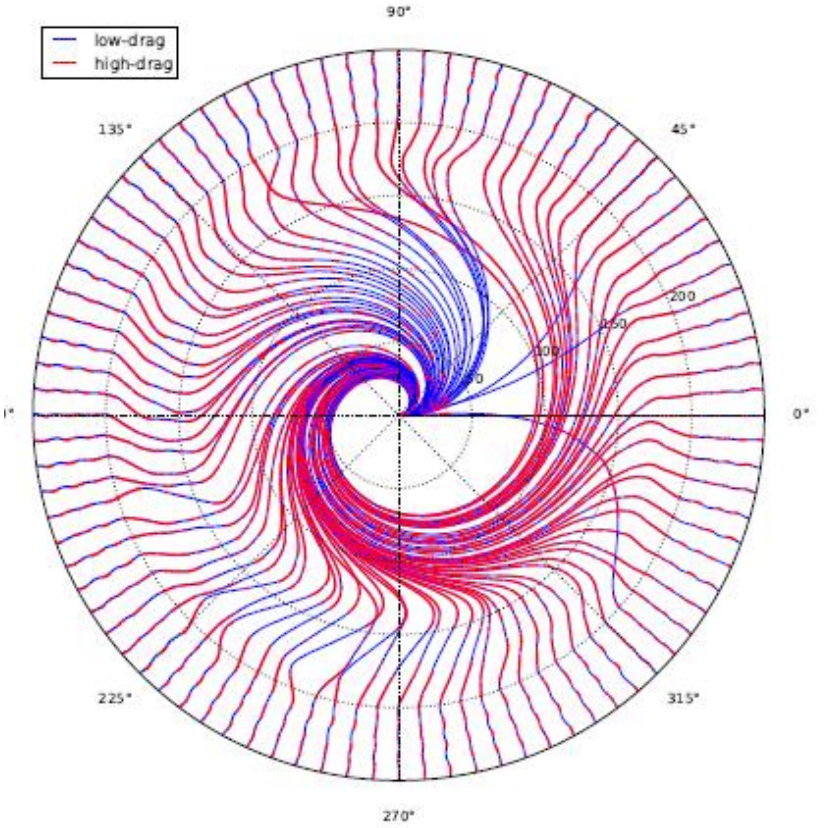


Figure 13: Simulation of Flock 3p phasing and station-keeping

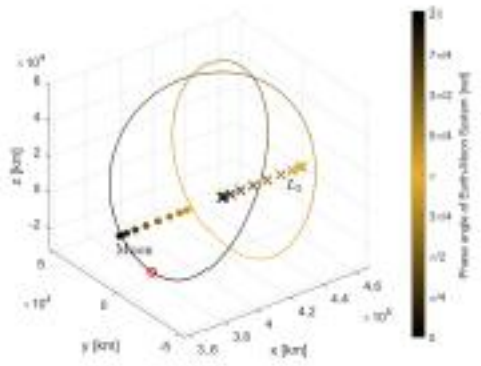


ıre 15: Simulation of Flock 3p phasing and station-keeping

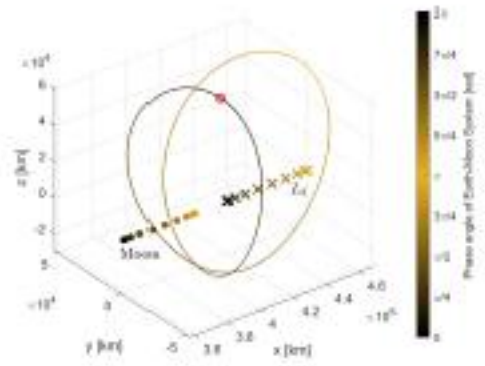
Сессия Dynamics

- Формации в окрестности точек либрации
- Маневрирование в присутствии мусора
- Стыковка с использованием тросовых систем
- Вычисление ограниченных относительных орбит

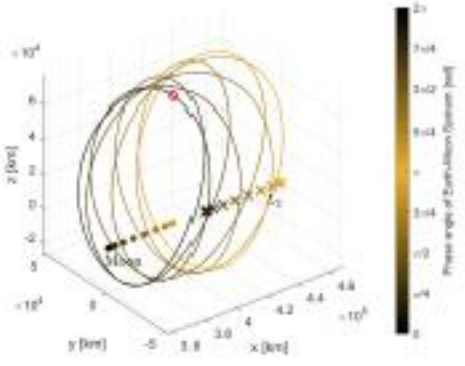
Deep Space Formation Flying Configurations in Elliptic Restricted Three-Body Problem



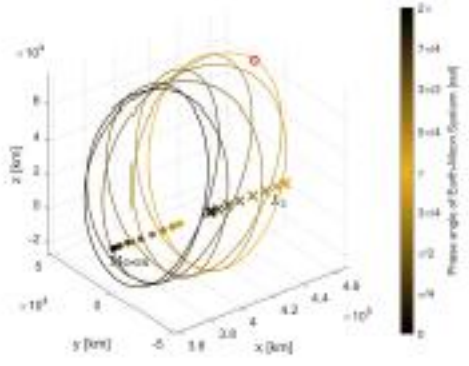
(a) Left Group, M2N1



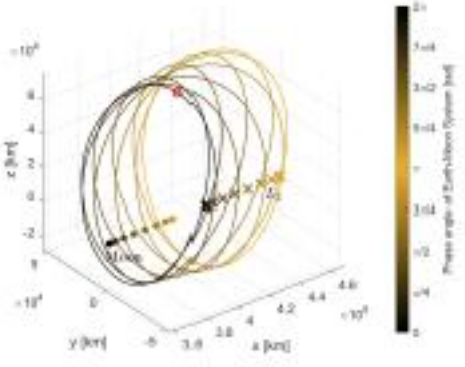
(b) Right Group, M2N1



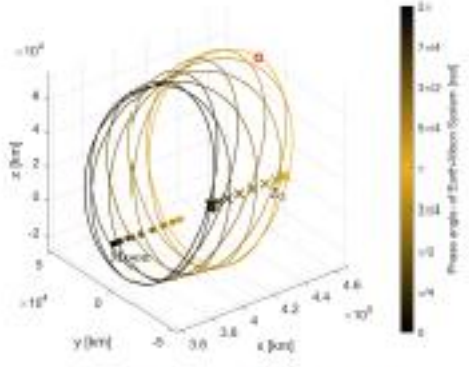
(c) Periapsis Group, M7N3



(d) Apoapsis Group, M7N3



(e) Periapsis Group, M9N4



(f) Apoapsis Group, M9N4

Сессия Touchless Formation Flying

- Использование электростатики:
  - Управление движением
  - Управление ориентацией
  - Докинг

Guidance, Navigation And Control Advances In Electrostatic Attitude Control On Passive Geo Objects

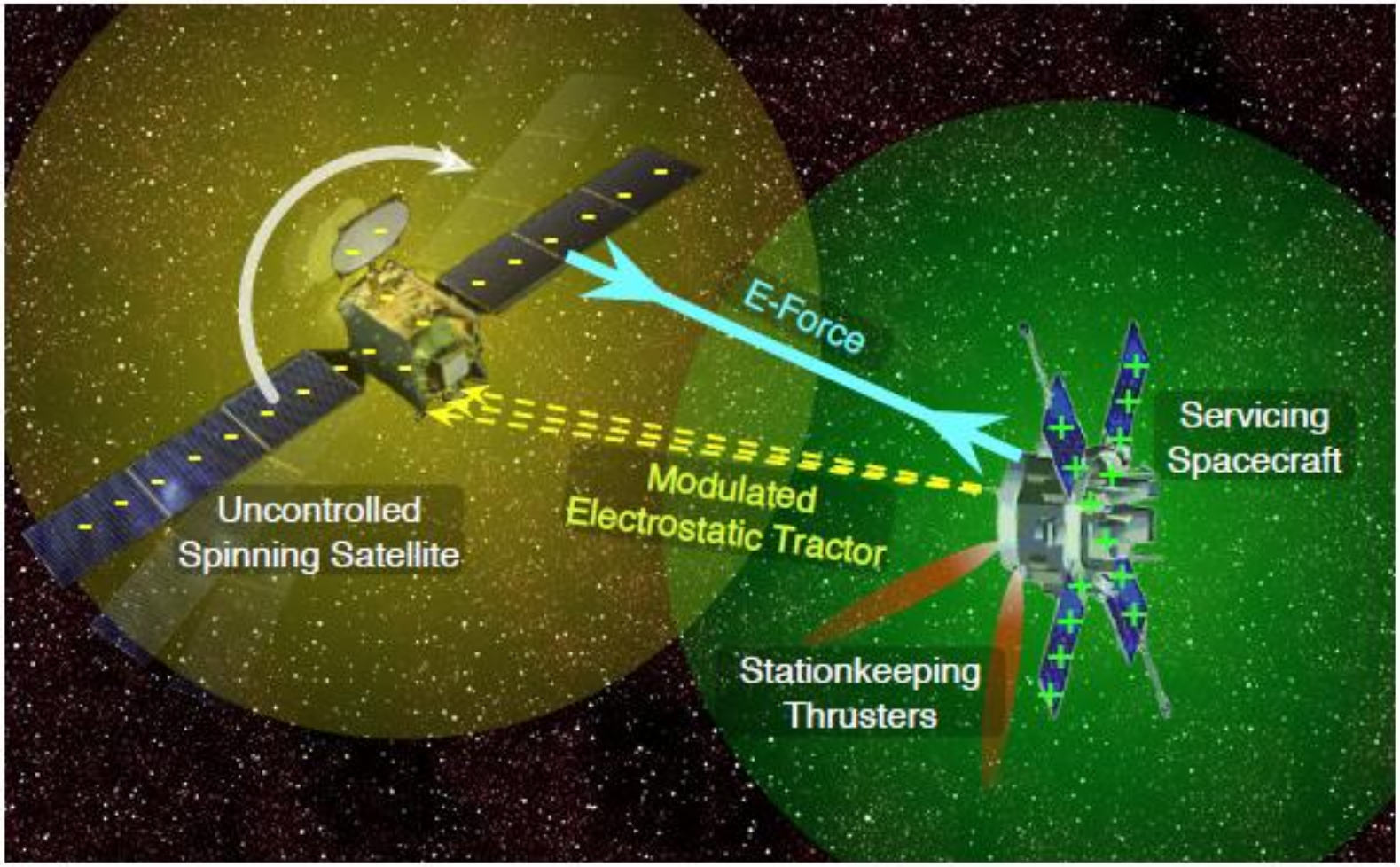
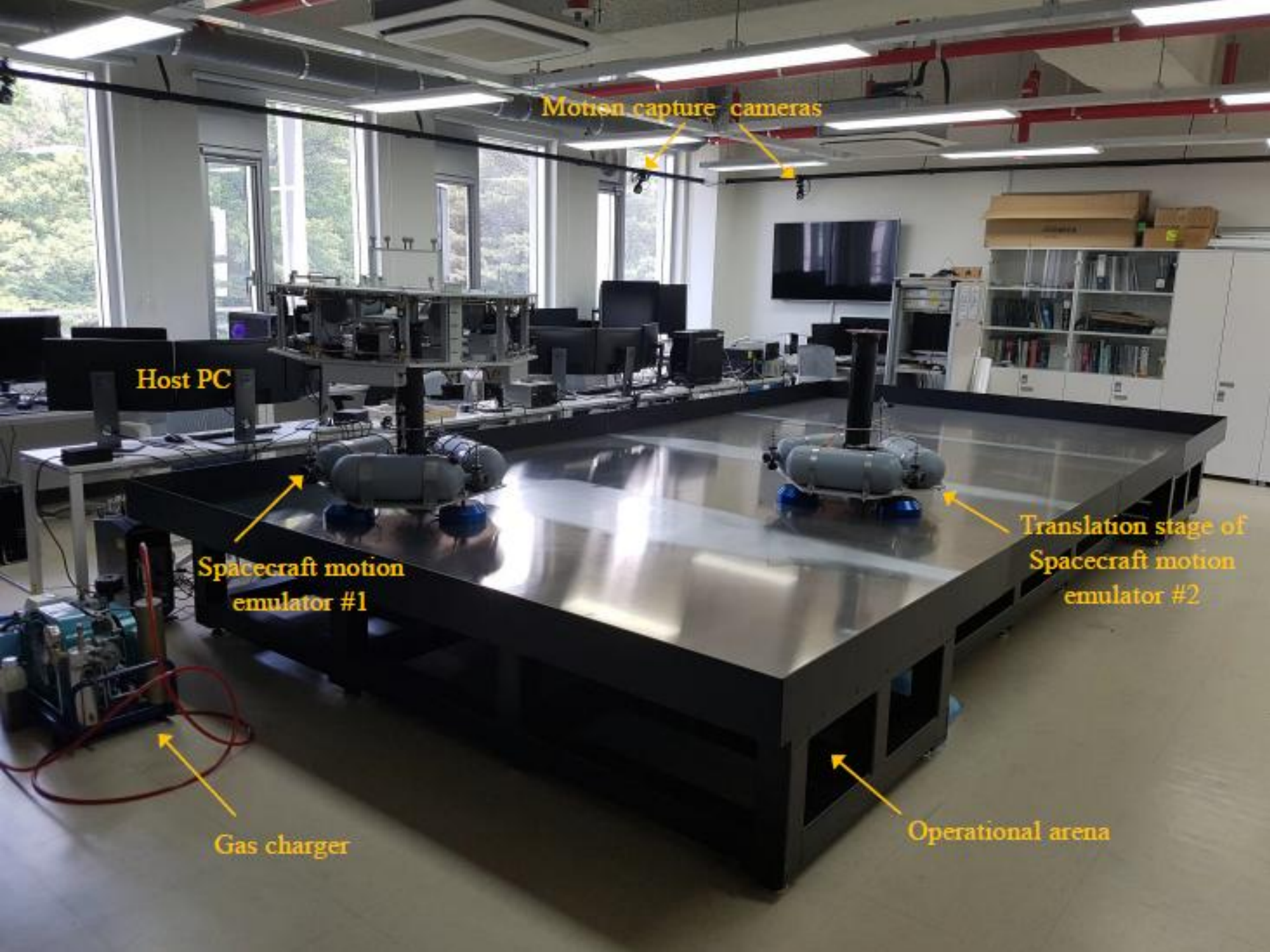


Figure 1. Electrostatic actuation technology enabling diverse service mission profiles.

Сессия FF Testbed

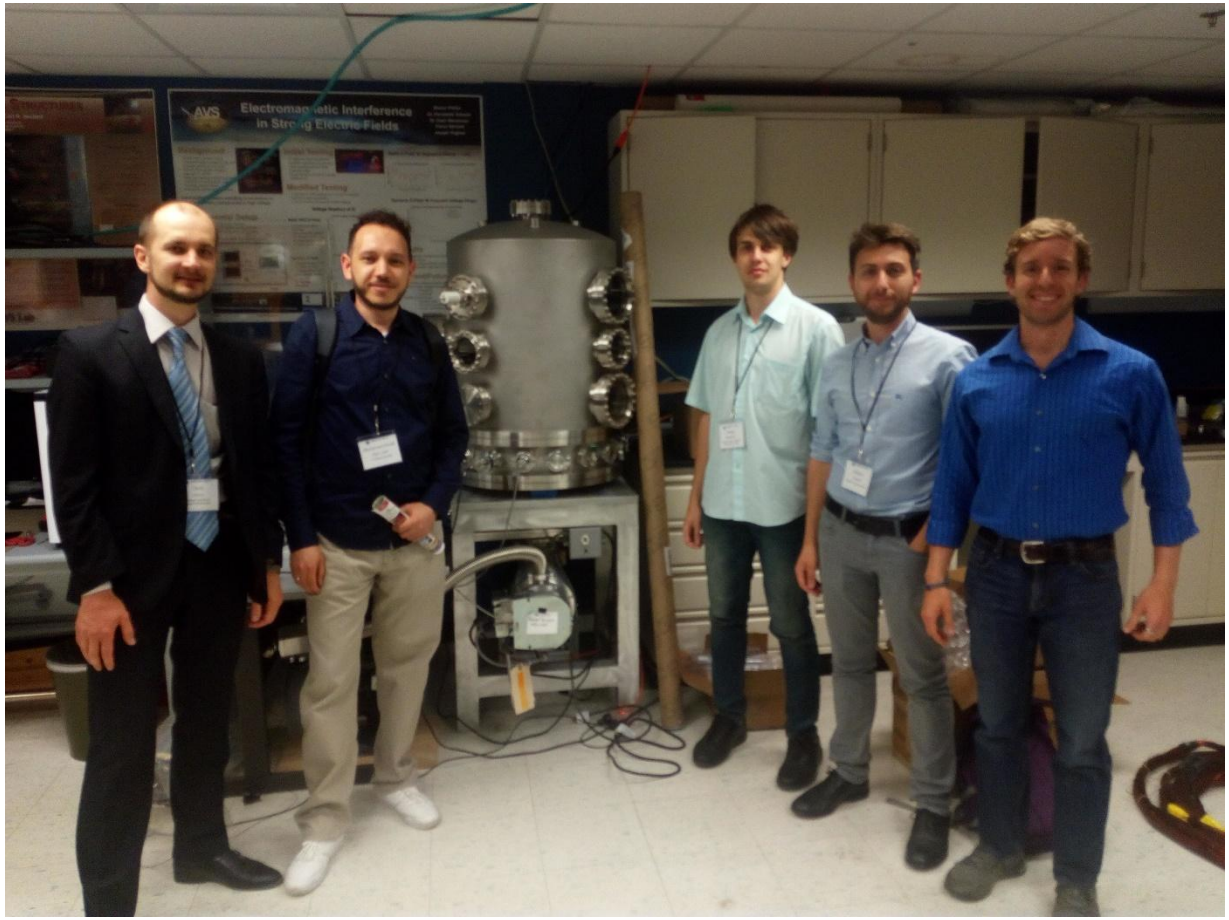
- COSMOS – software/hardware симулятор для >50 спутников в формации
- Навигация по источникам света + 3d моделирование
- Корея, ASTERIX facility
- Италия, Рим, 5-DOF testbed для наноспутников


Motion capture cameras
Host PC
Spacecraft motion emulator #1
Translation stage of Spacecraft motion emulator #2
Gas charger
Operational arena

Сессия FF Sensing

- Определение движения телескопа с помощью лазерного дальномера
- Отслеживание спутников после отделения по визуальной информации
- Проблемы визуальной наблюдаемости при групповом полете

Лаборатория prof. Schaub (CCAR)



Экскурсия в LASP