EPFL

Sensor Orientation Test 3

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Lecture 31.05
T3 (20%) preparation & options

I. Written
- Subject: Motion modeling & filtering
- Duration: one period
- Preparation – Exercise 3 (concept questions + modeling exercise) – Moodle
- Subscription: the interested send an e-mail to Jan before Mon 27, 5 PM.

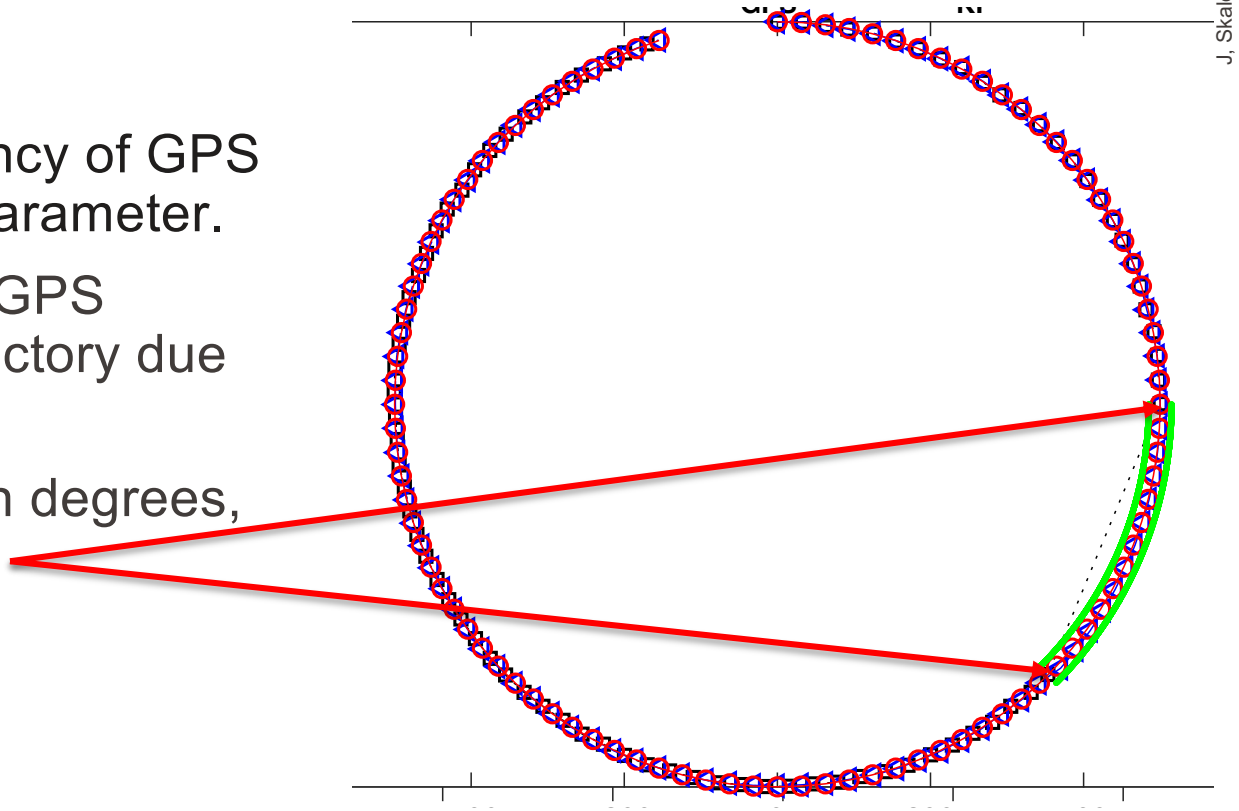
II. Oral
- Subject: aligned with Lab 5 and/or Lab 6 (if running)
- Duration: ~10 min
- **Mandatory** preparation: see page 3
- Voluntary preparation: see page 4
- Subscription: by default (no e-mail needed)

T3 (20%) preparation for oral option

J, Skaloud, ESO

Mandatory preparation

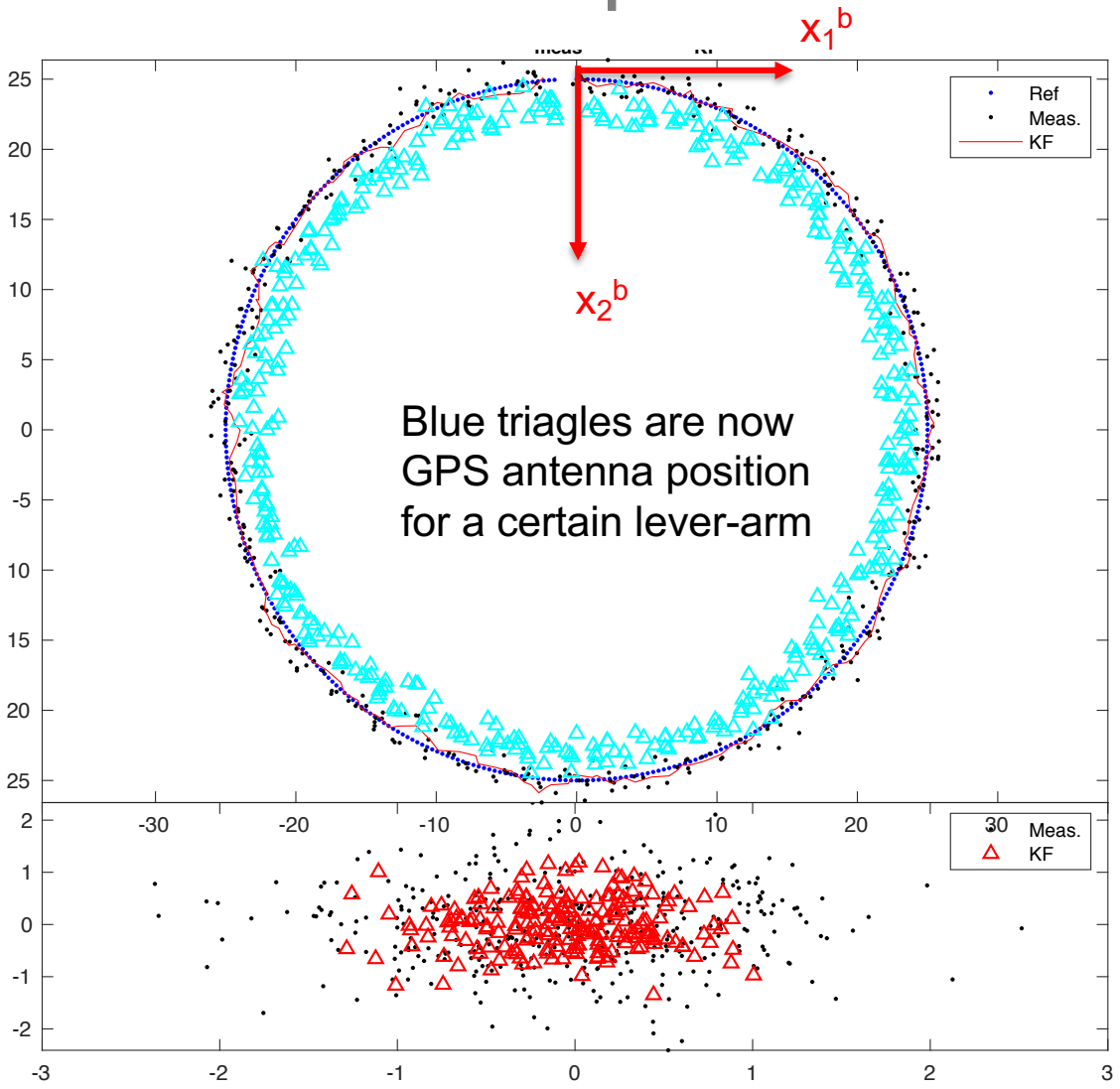
- Possibility to vary the frequency of GPS updates (0.1 – 10 Hz) as a parameter.
- Simulation of an absence of GPS positions on portion of a trajectory due to a ”tunnel”.
- Start-End of tunnel is given in degrees, e.g., 90-135^{o} on the picture



T3 (20%) preparation for oral option

Voluntary preparation

- Implement **GPS antenna lever-arm** $(x_1,x_2)^b$ in body frame
- Body-frame at time(0)
  - $X_1 \rightarrow$ East (forward, alongtrack)
  - $X_2 \rightarrow$ South (= -North) (towards circle centre)
- Plot filtered errors with (as on the picture) & without considering lever-arm corrections in the GPS obs.



31.05
Organization

I. 13:15
- ALL + Valentina

II. Oral
- Passage will follow, others will work on Lab 6 with the help / guidance of assistants

III. Written (via e-mail subscription < 27.5. 5PM)
- Immediately after terminating I. , Lab 6 continuation after that.

Course evolution 2023 ➜ 2024

Workload

- No. of graded labs was drastically reduced from 10 → 6.
- The liberated space is used for i) more time between some labs, ii) new non-graded exercises with solutions for
  - a) harmonization of background in estimation & signal processing
  - b) preparation / practicing for tests.
- The former participation of students was reduced by half, amounting to one short intervention (~10 min.) per semester (2 students together)

Organization

- Content re-grouped into 3 main blocks that are presented linearly.
- Each block terminates with an exercise session followed by a tests.
- A cockpit view with links between topics is guiding presentation of new subject.

Delivery

- New slides were created on Moodle, student notes are limited to clarifications.
- Black-board derivations are limited to a minimum – the longer derivations are distributed in pdf via Moodle as complementary readings.