ATLAS Fast Timing Detector PostDoc Position at Nikhef/RU

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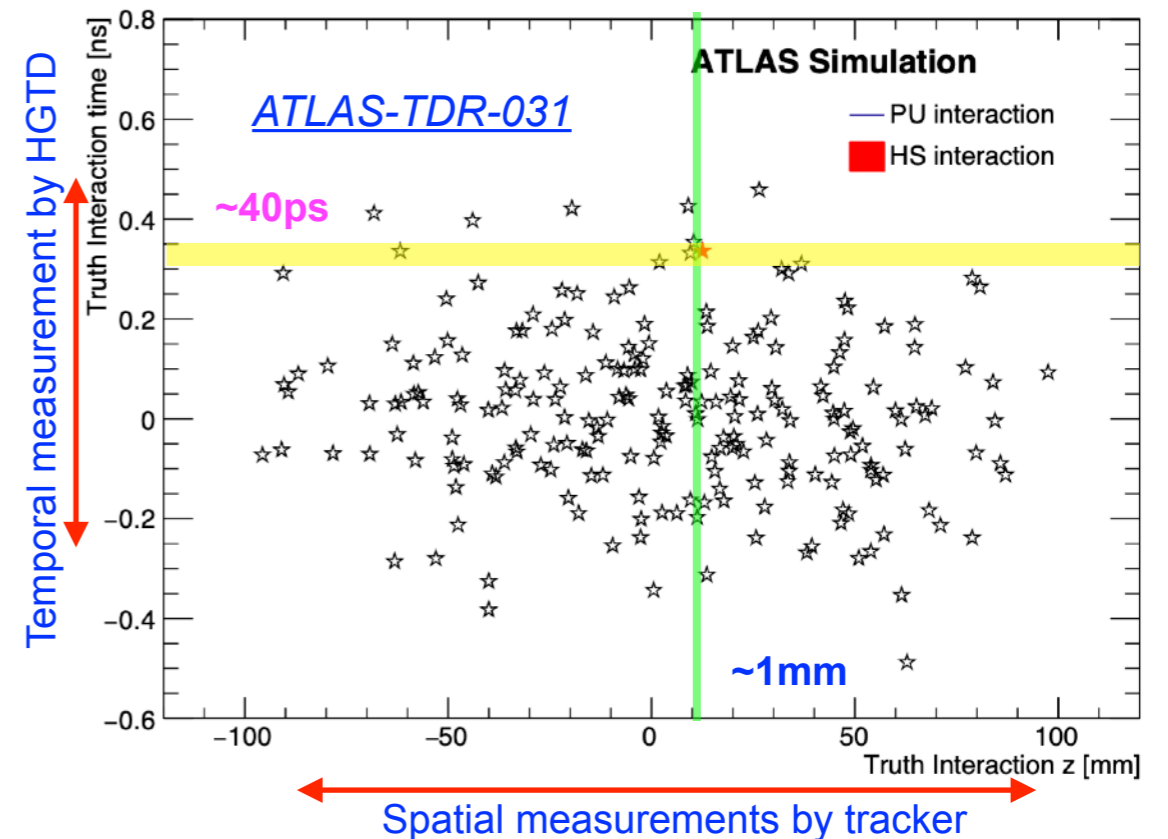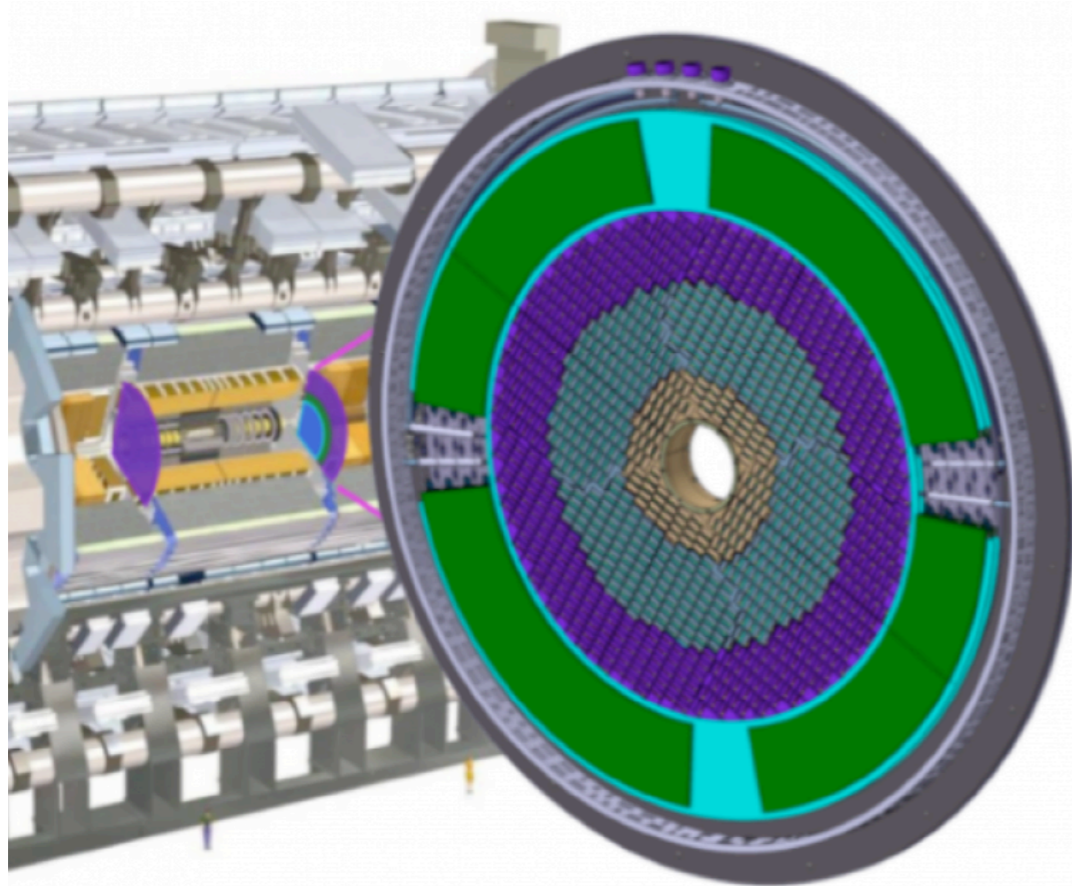### LHC Job Matching Event

Fast Timing at ATLAS

Research topic

ATLAS High Granularity Timing Detector

- Phase 2 upgrade project - picosecond fast timing detector before end-cap calorimeter
- Enabling time measurement of tracks in $2.4 < |\eta| < 4.0$
- Low Gain Avalanche Diode technology
- Readout with phase-II FELIX system (the FPGA card, and the corresponding software system)
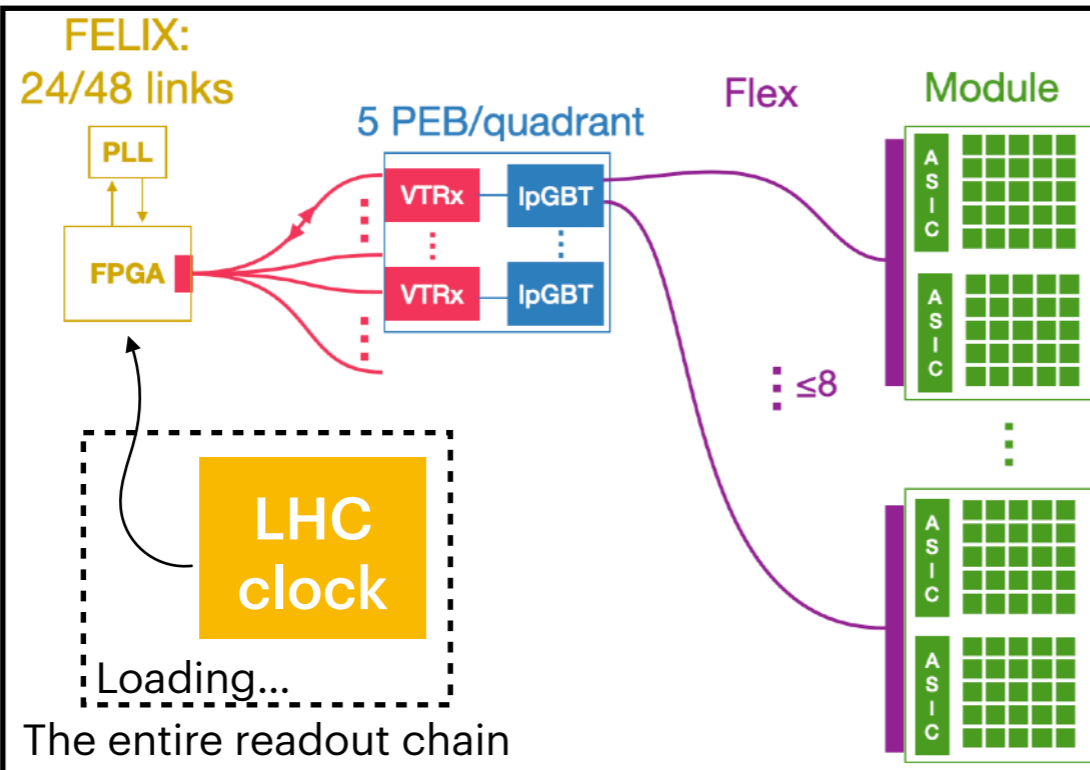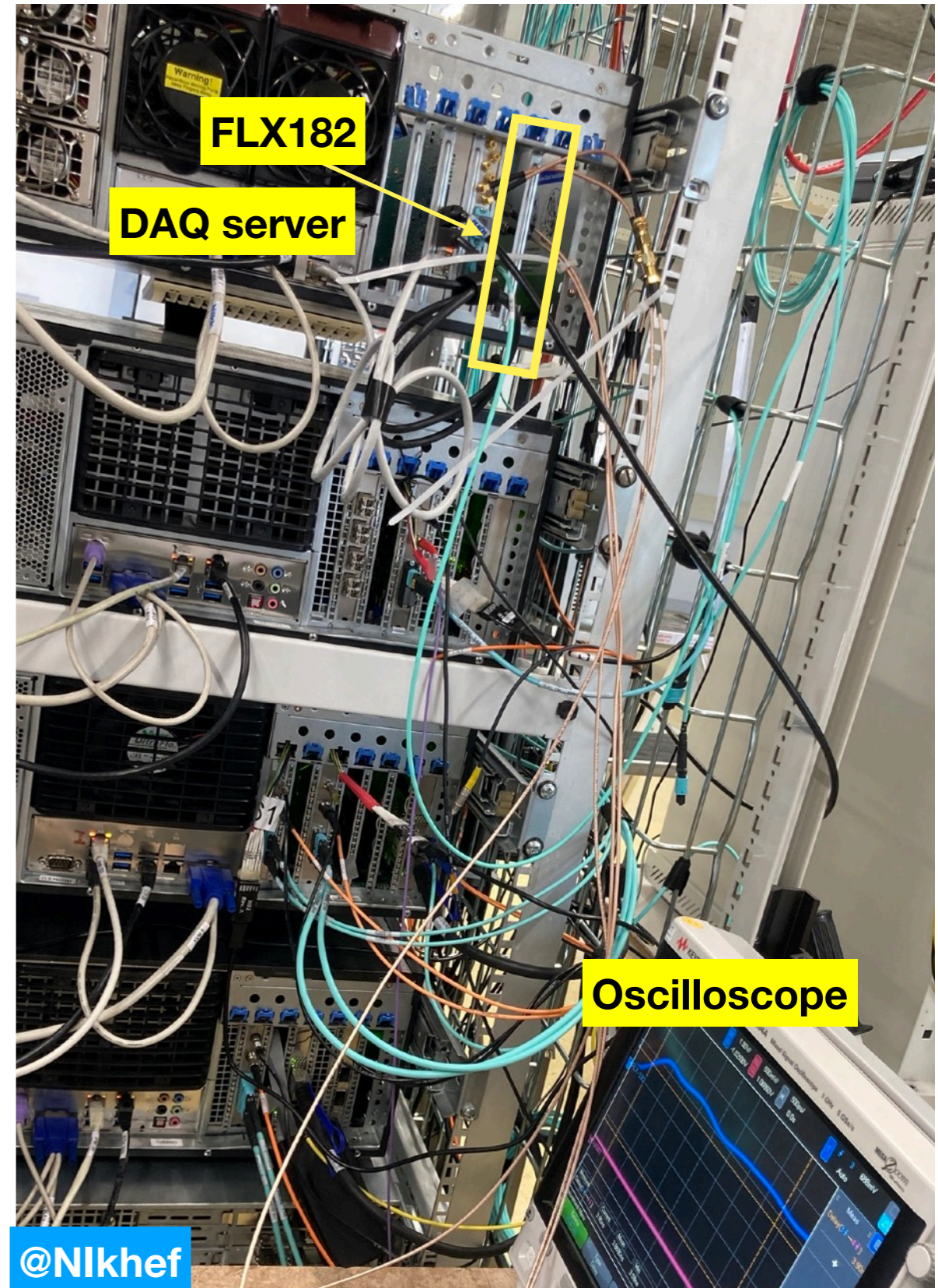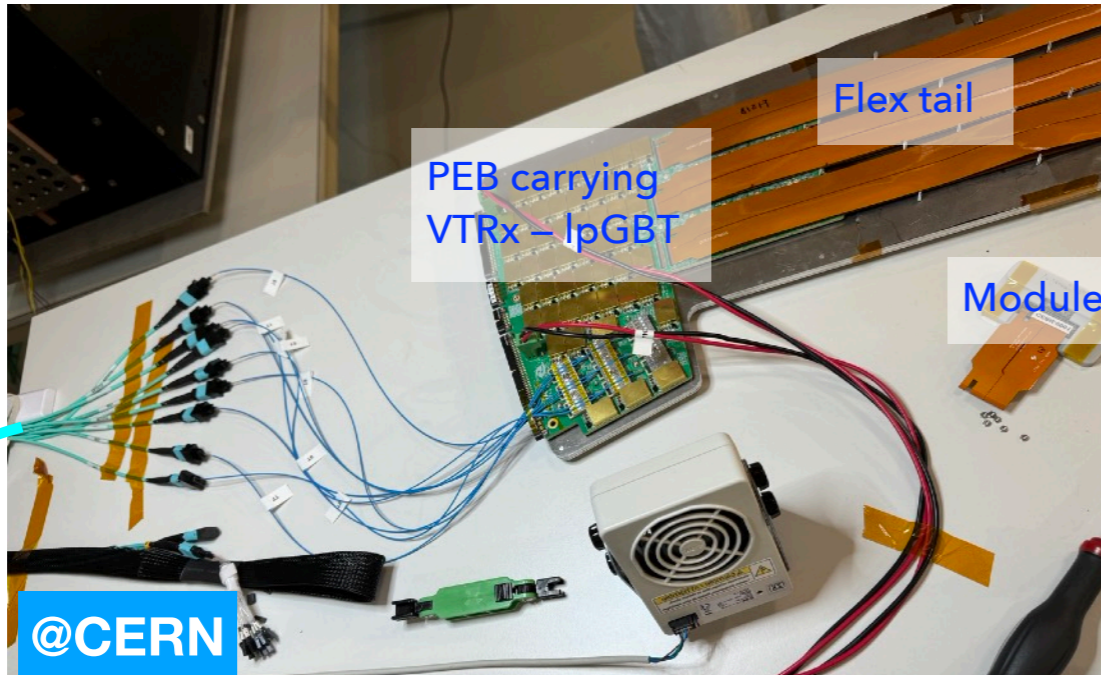

Contributions from Nikhef & RU Nijmegen

- Data acquisition system (one of the few sites owning a DAQ demo setup), sensor characterisation, sensor simulation, test beam analyses
- Growing expertise: time alignment (e.g. correction, calibration), and time-track association
- Coordination efforts by M. Wu on *readout, data pre-processing* and by F. Filthaut on *electronics*.
- **Synergy** with strong FELIX contributions from Nikhef and RU Nijmegen on software, firmware & clock

Time and Clock at the entire readout chain

A challenging research topic impacts the final detector performance

FLX712

@RU: a combination of CERN and Nikhef

Flex tail

PEB carrying
VTRx – lpGBT

Module

@CERN

Loading
FLX182

Exp. 2024 Oct

FELIX:
24/48 links

PLL

FPGA

LHC
clock

Loading...

The entire readout chain

5 PEB/quadrant

VTRx — lpGBT

VTRx — lpGBT

Flex

Module

ASIC

ASIC

≤8

ASIC

ASIC

FLX182

DAQ server

Oscilloscope

@NIkhef

3

The ATLAS Group

- **Two sites:** Amsterdam, **Nijmegen** (where this position will be located)

Nikhef @ Amsterdam

HEP department @ Nijmegen

4
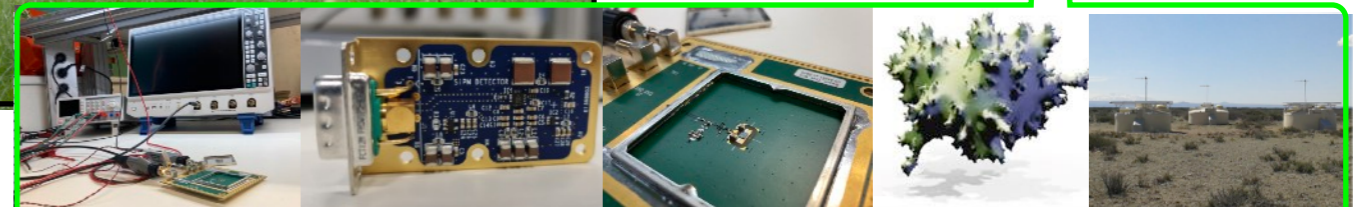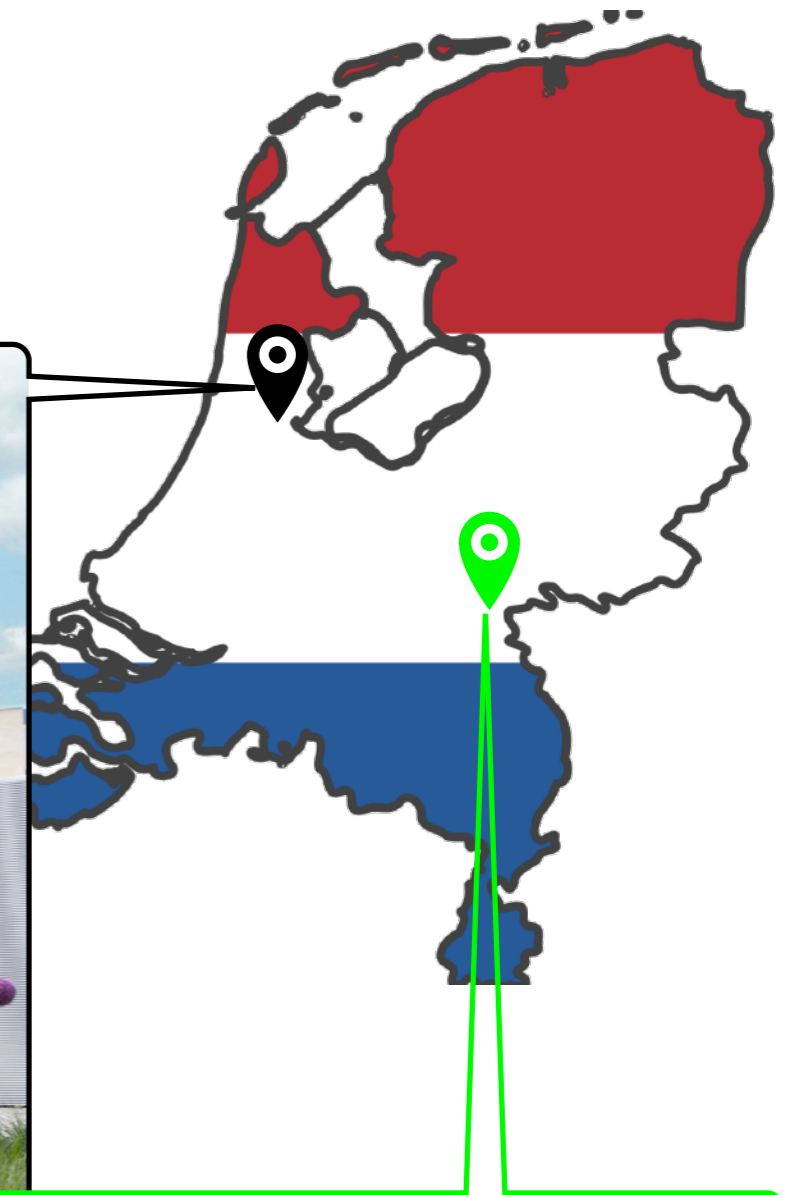
The ATLAS Group

- **Two sites:** Amsterdam, **Nijmegen** (where this position will be located)

- The Dutch ATLAS group is composed of 15 staff, 9 postdocs and 18 PhDs working on full spectrum experimental physics - *from detector to physics*

- **Detector R&D:** the group makes strong contributions to the Muon (MDT&NSW), ITK, HGTD and TDAQ (FELIX) projects.

- **Strong support** on detector R&D

  - Synergy with other detector R&D activities at LHCb, ALICE and CERN DRD through the *Nikhef detector R&D group*

  - Strong engineering backup:
    @Amsterdam - Nikhef engineer & technician groups;
    @Nijmegen: local group consists of 2 engineers + 1 technician on top of the University Technology centre

5

Position Fact Sheet

- Location: Nijmegen, Netherlands
- Regular travels to Nikhef at Amsterdam and CERN (frequent direct flights from Amsterdam, train connections through Paris/Germany)

Your role

- Gear the timing measurement and precise clock distribution in the HGTD *(development close to FPGA)*
- Investigate the limits of timing distribution and measurement in DRD7 context
- Represent the group at other institutes

Your qualifications:

- PhD in physics or related field
- Ideally with experience in detector R&D or TDAQ
- experience with FPGA is strongly preferred

Interested?

Read the full job post at Inspire-HEP
Apply at Nikhef vacancy
Deadline: *May 31st 2024*

https://inspirehep.net/jobs/2781201

Nijmegen: one of the **oldest cities** in the Netherlands and a real **student city** (10+% town population)
Famous for its **four-day Marches festival** (de 4Daagse) - 45k+ marchers, 70+ nationalities, 11-90 yr, walk up to 55km!
Also famous for its **highest density of pavement cafes**, find your favorite one to meet people and to relax.