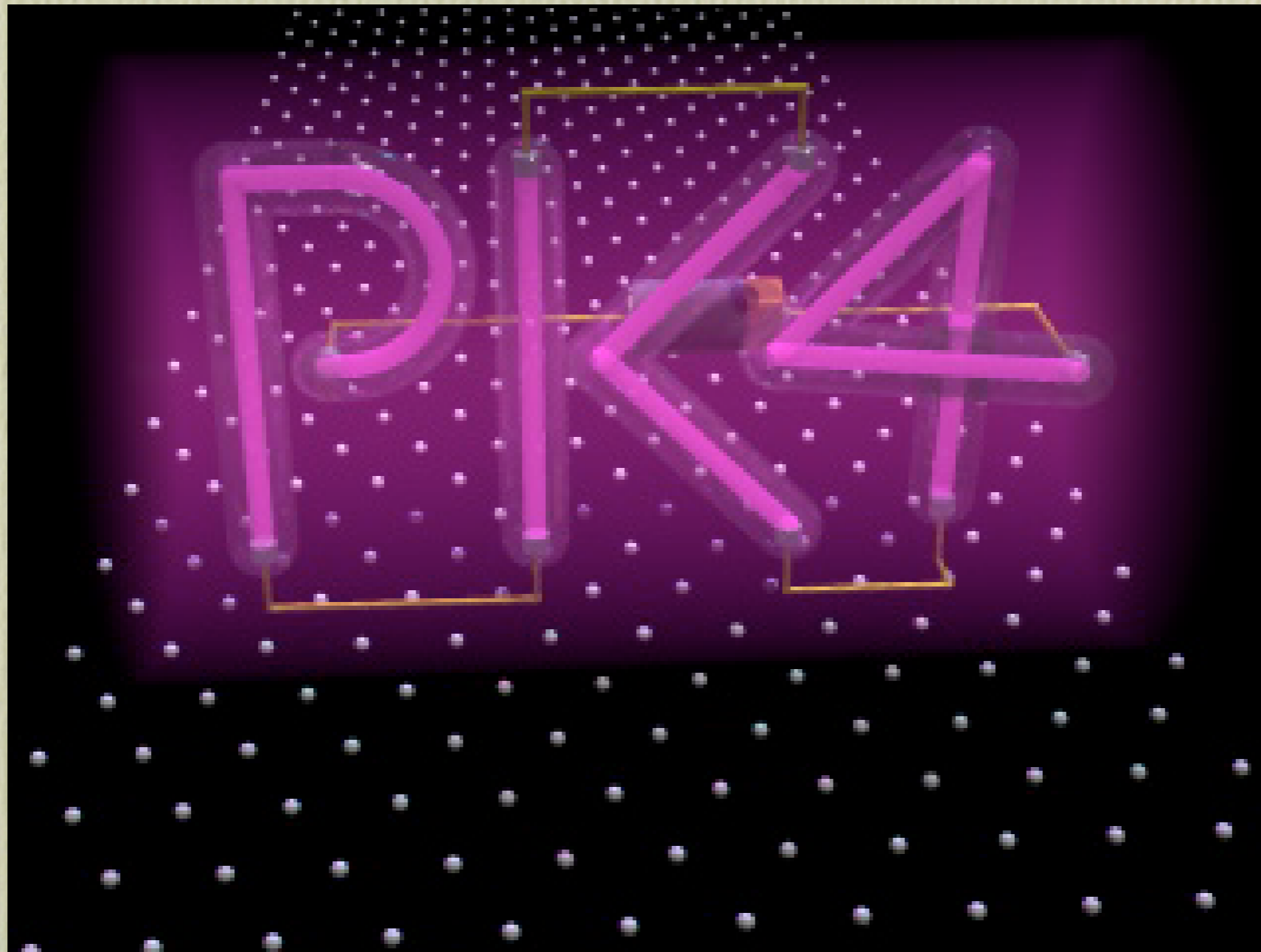


in association with M. Kretschmer presents:



in association with M. Kretschmer presents:



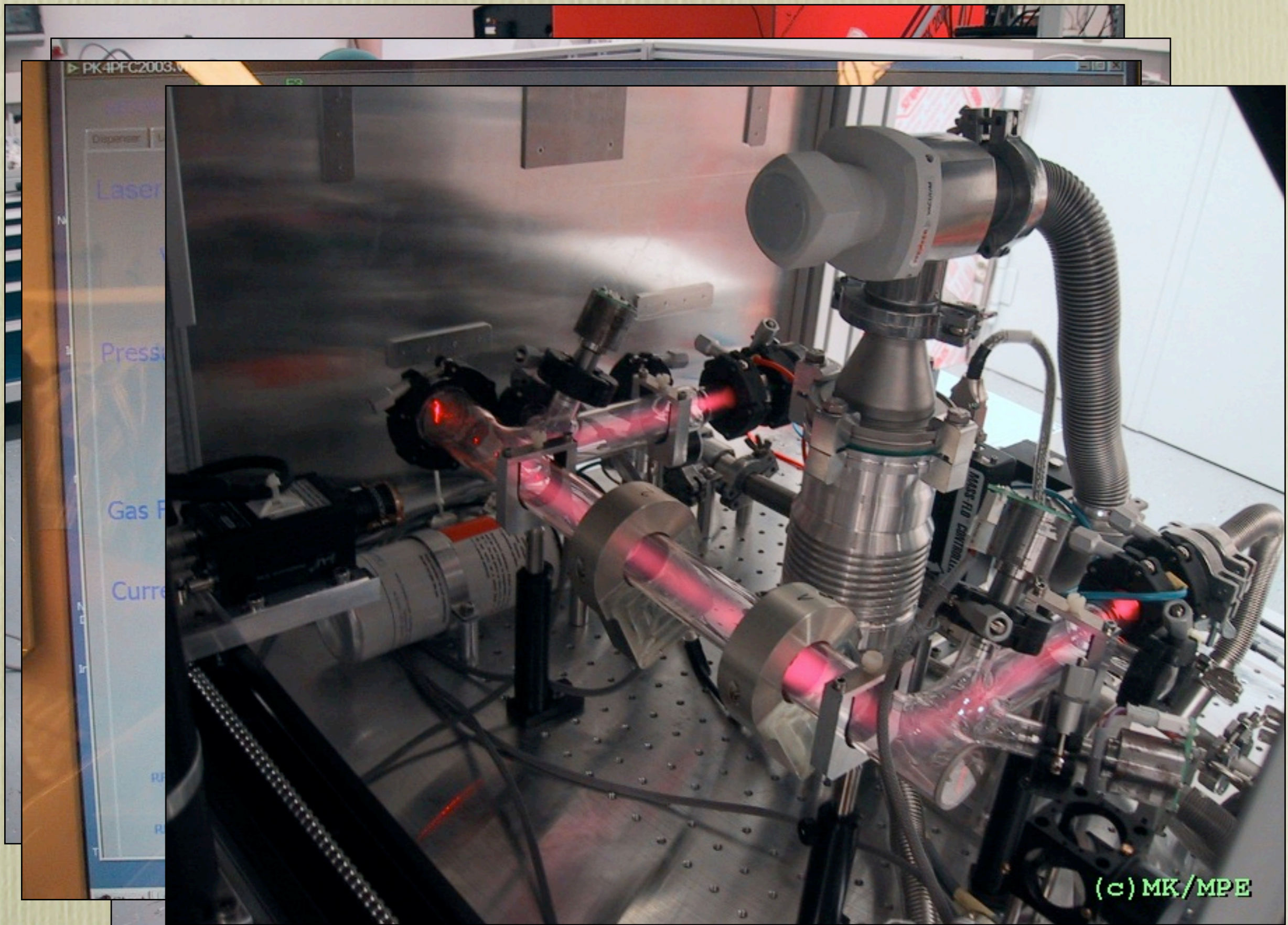
# @ Parabolic Flight Campaigns PF35 & PF36

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Bordeaux (F) 2003 & 2004  
A Summary

# Campaigns and objectives, so far

- PF35 - October 2003 Responsible
  - Day 1: Injection & collisions (Rick, Michael)
  - Day 2: Wave phenoma (Svetlana)
  - Day 3: Ion drag experiments (Markus)
- PF36 - March 2004
  - Day 1: Cloud density & collisions (IHED, Michael)
  - Day 2: Ion drag experiments (Markus)
  - Day 3: Wave phenomena (repeated) (Svetlana)



# The PK<sub>4</sub> PF Setup





(c) MK/MPE



# Flight preparations

# Experiment facts

MPE / CIPS CIPS

IHED

DLR

PK4

Plasmakristall 4

NASA/MK



ESA PF<sub>35</sub> - Oct. 10-16, 2003

CIPS

# Experiment facts

- Gas  
Neon
- Particles:  
1.2 - 3.4 - 6.8 - 12  $\mu\text{m}$  MF
- Gas flow:  
0 - 15 sccm
- Camera:  
120 fps, 640/240 (binned mode)
- Lens:  
1:1 (6.3/4.8) - 1:0.3 (21/16)



ESA PF<sub>35</sub> - Oct. 10-16, 2003

CIPS



# ESA PF35 - Day 1

Crew: Tarantik, Usachev, Kretschmer

- Main objective:  
Injection & cloud collision
- Injection:  
Many particles, mixtures
- Gas flow:  
Shear flows, cleaning?
- Collisions:  
'Ghosts', 'lanes', 'bullets',  
nozzles, waves, 'surfers', etc.  
=> Video!



# ESA PF35 - Day 2

Crew: Thoma, Usachev, Kretschmer

- Main objective:  
Waves, thresholds
- But:  
Gas flow controller failed => No gas!
- That means:  
No plasma experiments! :-(- :-(- :-(- :-(-
- Solution: Repair at Novespace workshop



# ESA PF35 - Day 3

Crew: Zobnin, Thoma, Kretschmer

- Main objective:  
Ion drag force
- Problem:  
Gas flow controller replaced with manual valve => inaccurate!
- That means:  
Few good experiments
- Results: => Markus Thoma





ESA PF<sub>36</sub> - March 22-24, '04



# ESA PF36 - Day 1

Crew: Tarantik, Thoma, Kretschmer

- Main objective:  
Particle densities,  
more collisions
- Problem:  
Plasma shortcut from  
parabola #16 => off
- Results: Density tests done, few collisions



# ESA PF35 - Day 2

Crew: Höfner, Thoma, Kretschmer

- Main objective:  
Ion drag force
- Problem:  
None (PK<sub>4</sub>)  
Plane (failure of power generator at par#17)
- That means:  
Perfect experiments!
- Results: => Markus Thoma



# ESA PF35 - Day 2

Crew: Höfner, Thoma, Kretschmer

- Ma  
Ion
- Pro  
No  
Pla  
ger
- Th  
Per
- Re



Exchange of the defect power generator



CIPS

# ESA PF<sub>35</sub> - Day 3

Crew: Höfner, Thoma, Kretschmer

- Main objective:  
Dust waves & force balance
- Problem:  
None!
- That means:  
All experiments performed
- Results: => Svetlana





# ESA PF<sub>35</sub> - DVD Movie

**WAM-CAM Film** & **MPE Garching** präsentieren:

**PK3-Plus & PK4**  
*Parabolic Flight Campaign 35 (ESA)*

Tag 1 - 3



Bordeaux, 7 - 17 Oct 2003

**DVD**

*Enjoy!*



**CIPS**