

1st Meeting "Polarized Nucleon Targets for Europe"

In the Sixth European Framework Program

29/30 November 2004

Ruhr-Universität Bochum

Germany

Static Polarization of an HD target and Transport Orsay-Grenoble

Distillation of HD - Residual Gas Analysis (RGA)
 - Distillation Still

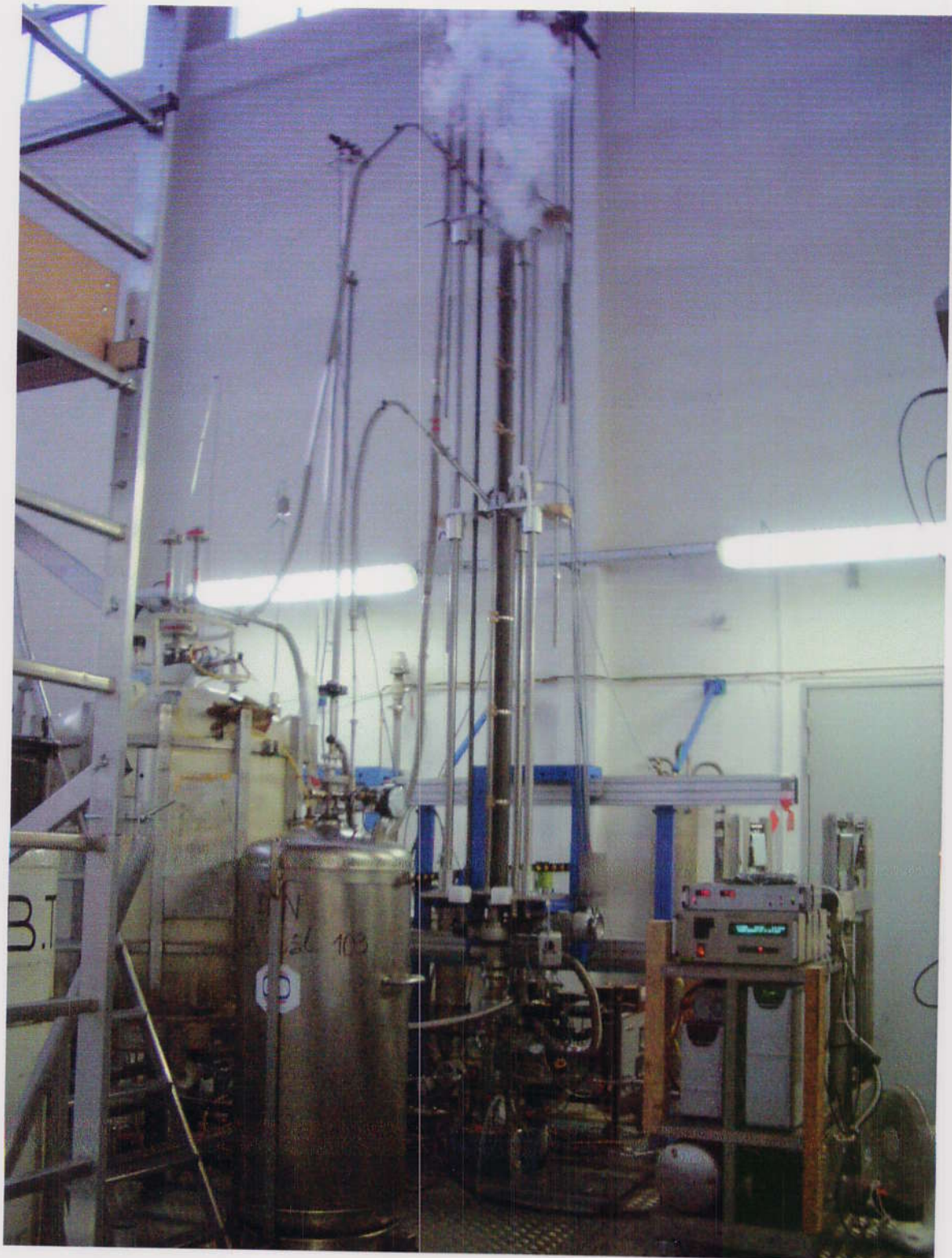
Dynamic polarization of HD (Bochum)

NMR Developments (INFN)

I3HP Milestones

J-P Didelez
IPN ORSAY
(France)

cimg0240 (1728x2304x24b jpeg)



cimg0251 (2304x1728x24b jpeg)



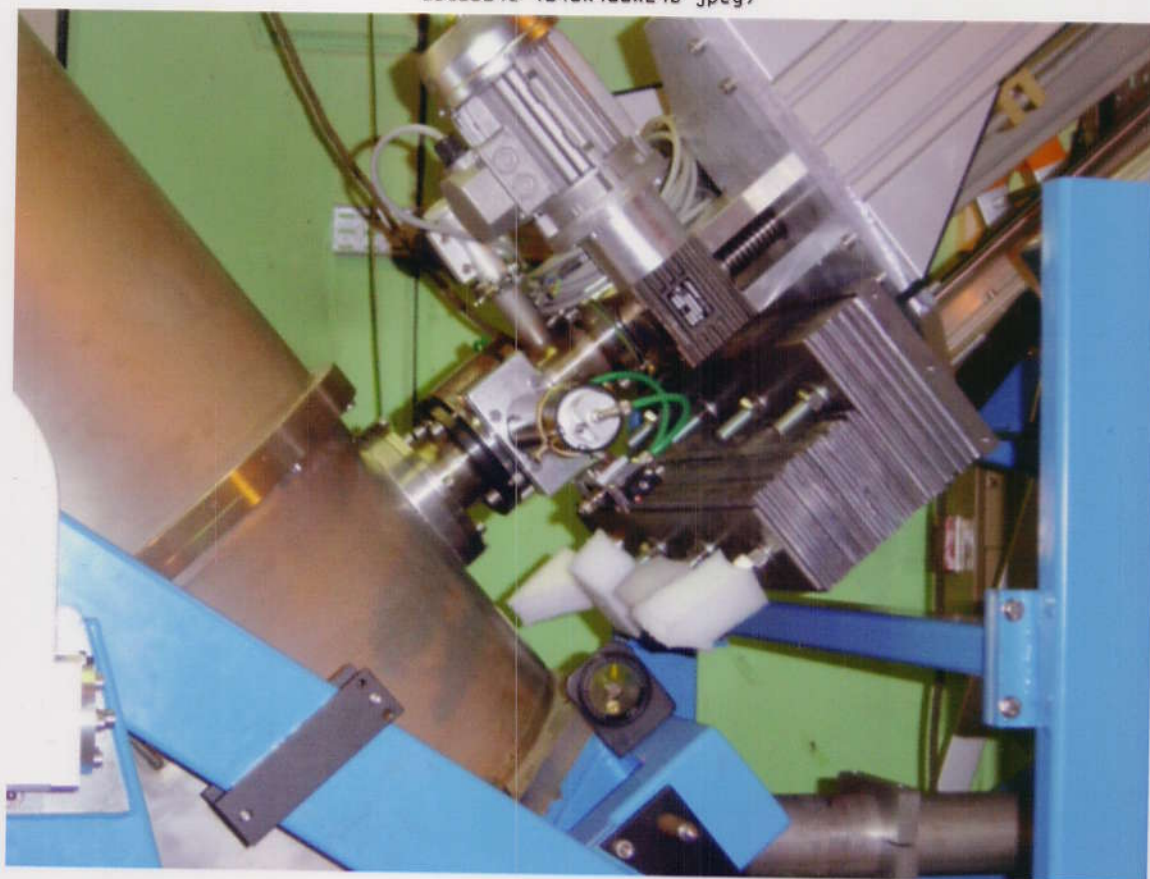
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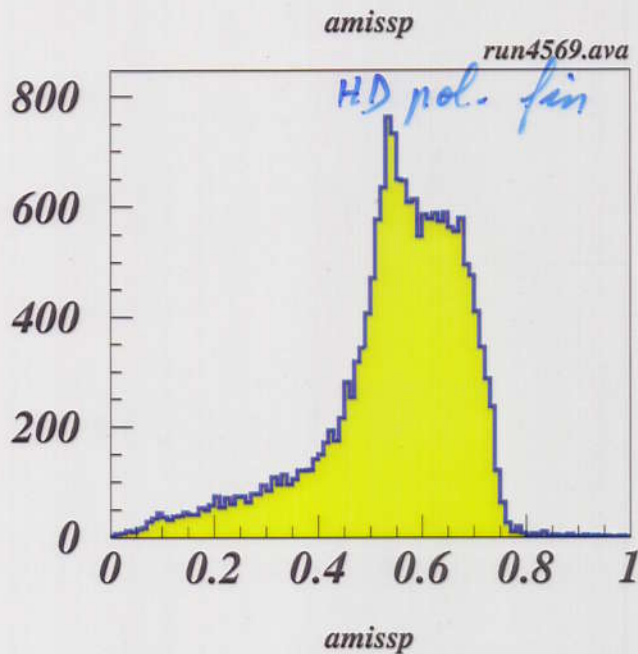
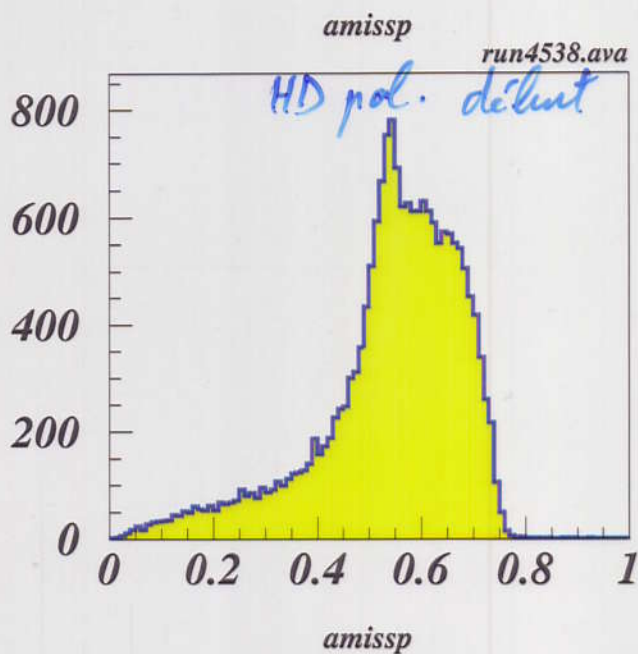
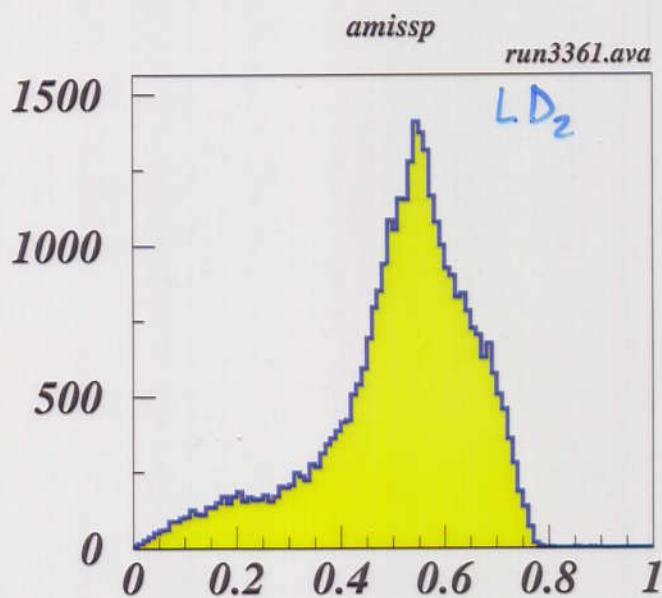
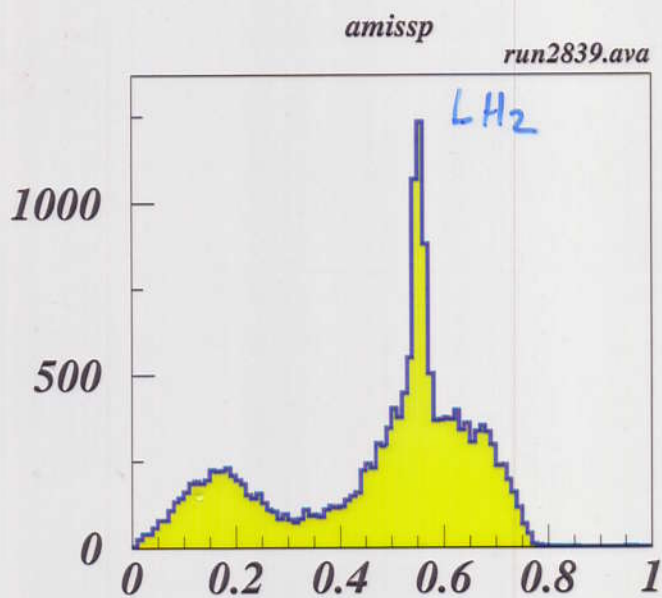
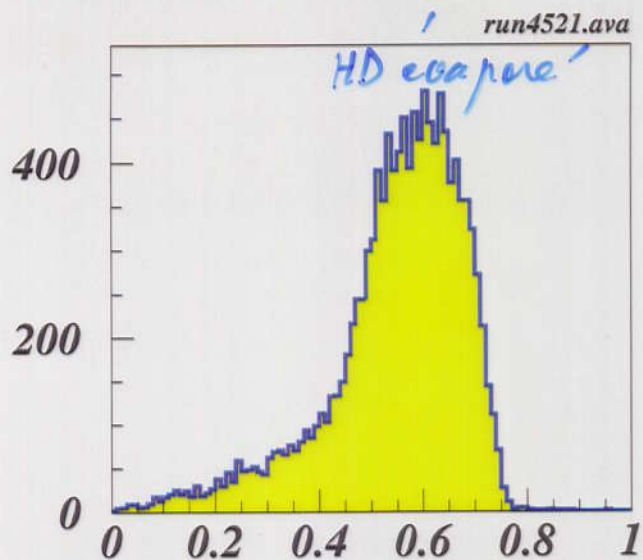
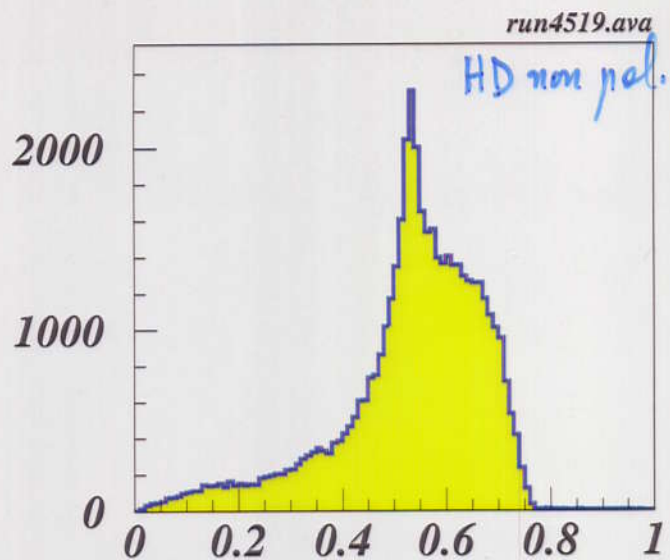


dsc00144 (640x480x24b jpeg)



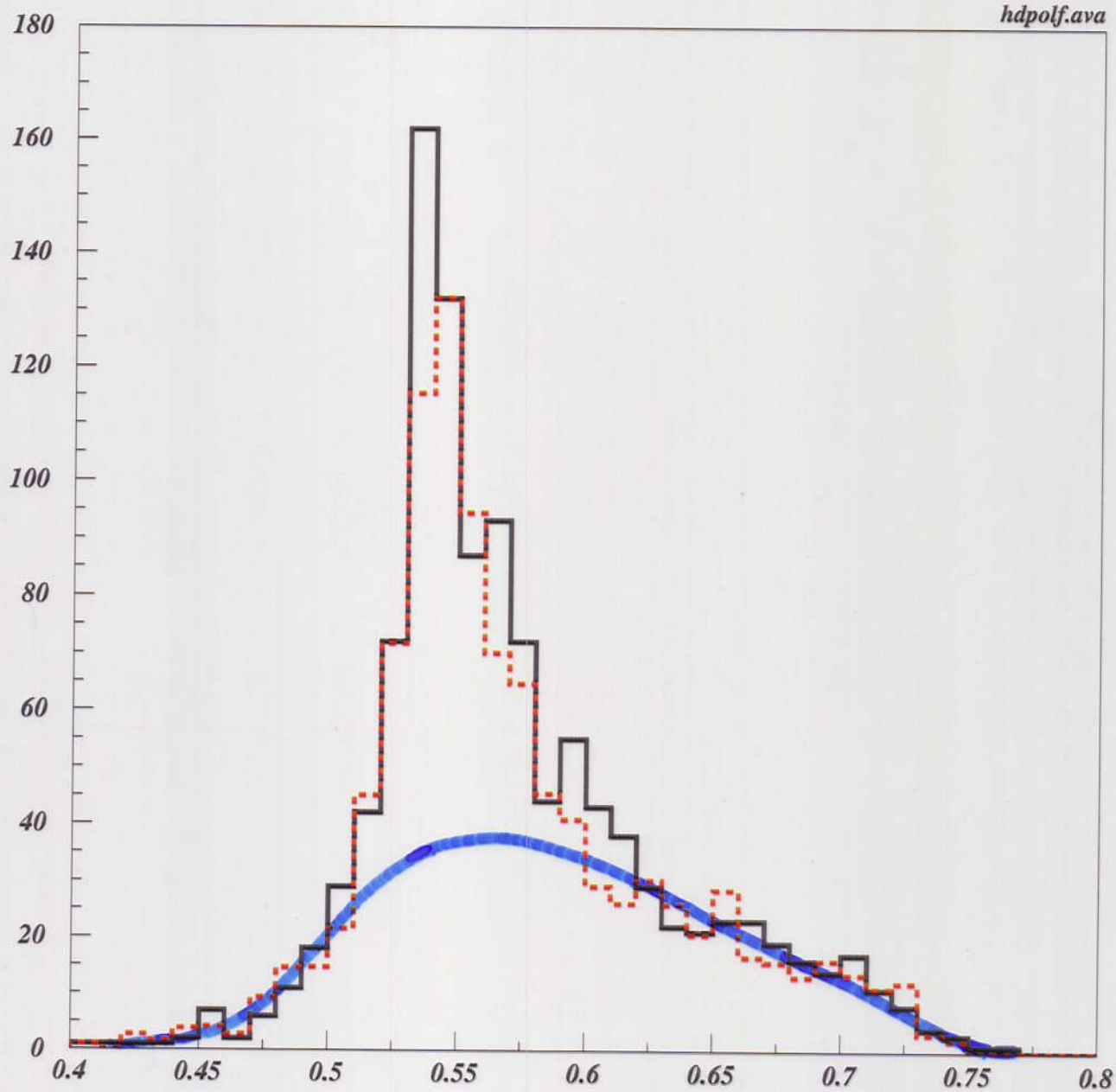
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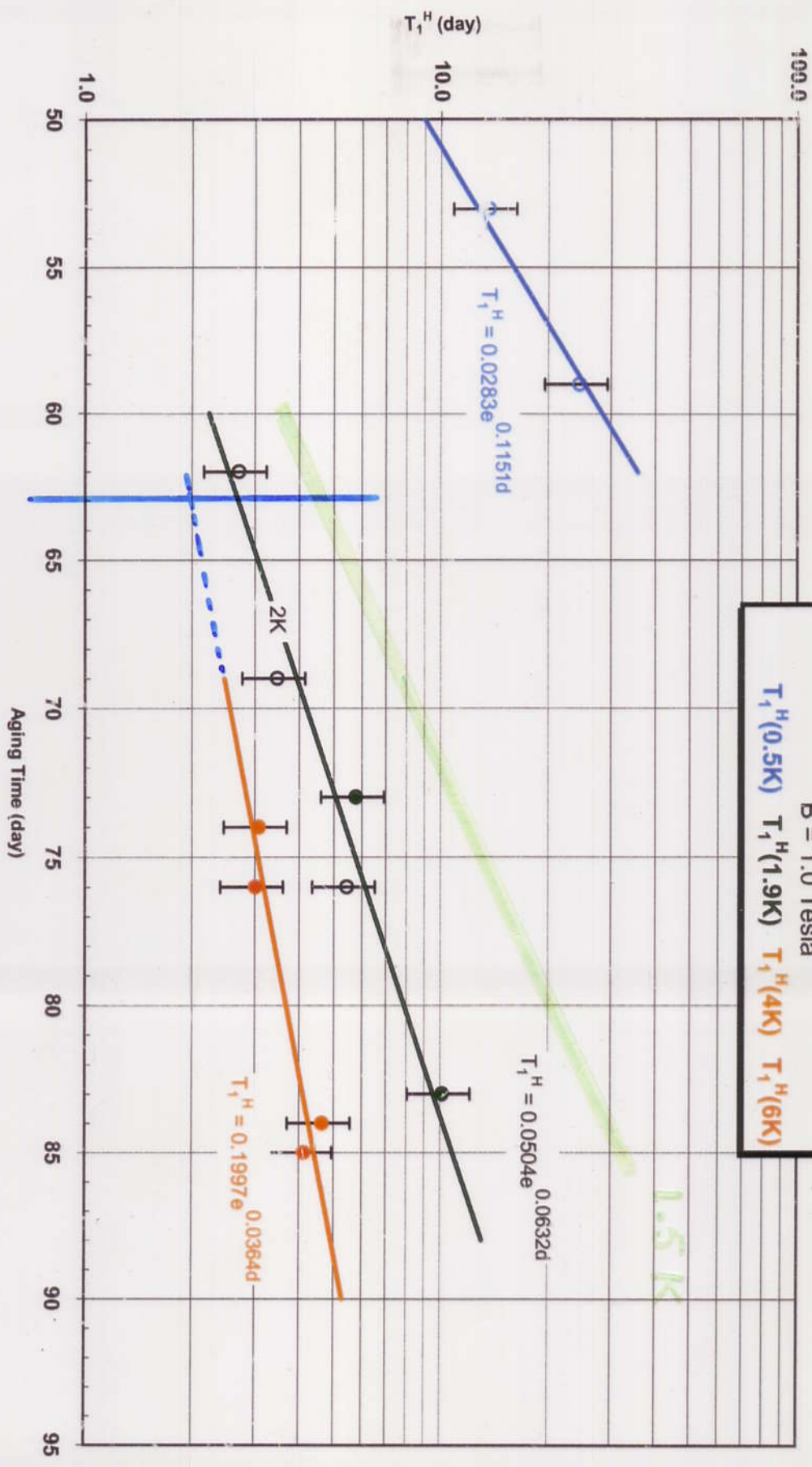
hdpolf.ava



$I_H \sim 19 \pm 5 \%$

$T_H \sim 36 \text{ fms}$

Proton Relaxation times versus Aging time
 99.51 % HD 0.23 % D2 and 0.26 % H2
 B = 1.0 Tesla
 $T_1^H(0.5K)$ $T_1^H(1.9K)$ $T_1^H(4K)$ $T_1^H(6K)$



RGA Analysis of HD Samples

Commercial H2: $2\text{E}-2$; D2: $2\text{E}-2$

Madison H2: $1.7\text{E}-2$; D2 $1.7\text{E}-2$

Columbia H2: $2\text{E}-3$; D2: $2\text{E}-3$

After one month of ageing

Columbia H2: $1.7\text{E}-5$; D2: $3.7\text{E}-4$

After three months of ageing

Columbia H2: $2\text{E}-9$; D2: $1.5\text{E}-5$

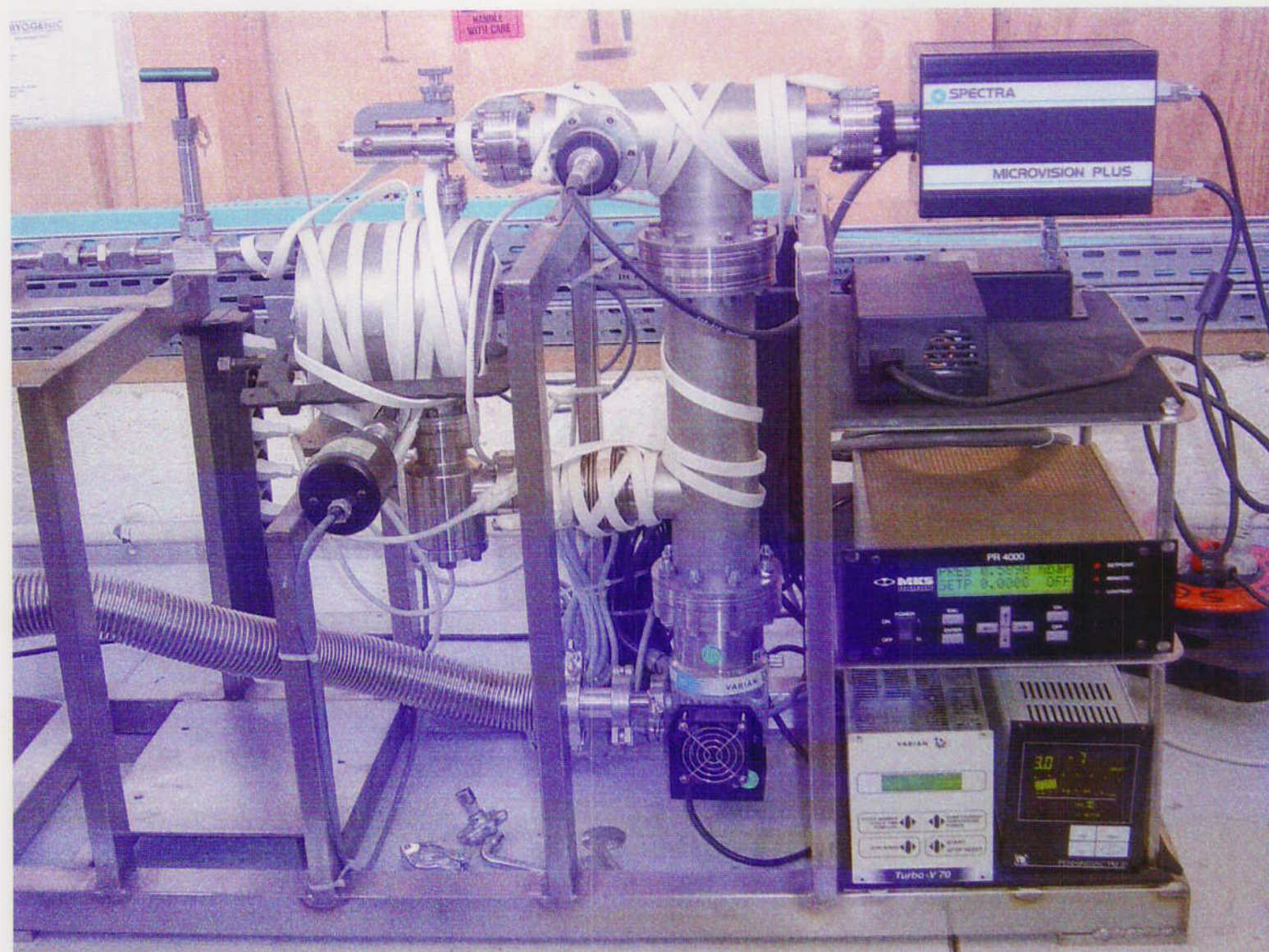
HD (commercial) H2: $5.0\text{E}-3$; D2: $6.3\text{E}-3$

New HD H2: $3.3\text{E}-3$; D2: $3.4\text{E}-3$

After 70 days of ageing

New HD H2: $5.9\text{E}-8$; D2: $7.3\text{E}-5$

dsc00396 (2) (1280x960x24b jpeg)



dsc00392 (2) (1280x960x24b jpeg)



CONCLUSIONS

- Static Polarization of HD, OK but Progresses needed
- RGA OK (achieved)
- Distillation of HD, in Progress
- IBC at 0.5K (not before end 2005 – 2006)
- NMR study (to be done soon)
- Dynamic Polarization of HD (to be discussed in Bochum)