## INSTRUMENTAL DEVELOPMENTS AT BNC

MÁRTON MARKÓ

WIGNER RCP BNC

### **ON-GOING INSTRUMENTAL DEVELOPMENTS**

- Imaging station
- FSANS
- In-beam Mössbauer spectrometer





Reconstruction of the **PSD** diffractometer

- New sample environment
- Changing the detectors
- Changing the electronic system (EPICS)

Cu(111) crystal monochromator  $\lambda = 1.07$ Å 20= 8-115°; Q=0.45-10 Å<sup>-1</sup>

 $=4\pi \sin\Theta/\lambda$ 



He-3 linear sensitive position (60cm) detectors

Sample: 2-4g powder

Measuring time: 24h

Vanadium can,Ø:5&8mm



New in-situ cell, to solve structure by direct method, in real time – under installation

High Pressure and Temperature Cell, HTP\_CELL: own development by Margit Fábián & József Janik

Temperature and pressure interval:

TiZr cell:  $T_{max}$ : 450°C;  $p_{max}$ : 300 bar (Ti 52.5% – Zr 47.5%, null matrix alloy)

Saphire cell:  $T_{max}$ : 950°C;  $p_{max}$ : 300 bar



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### Reconstruction of the reflectometer



### -λ=4,28 Å -Be filter -2D He3 detector







## **Liquid Hydrogen Cold Moderator**

#### **Further development**

- Low dimensional moderator •
- Changeable O-P ratio •

IX. TANGENTIAL CHANNEL

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Optimizet guide system (INFRADEV)

18 18 17 ROT. +3.5 +2.5 -2.5 366 46 420 67 437 20 450 21 459 22 464 23 52 364 409 419 428 436 443 449 454 458 461 509 520 530 353 352 M7 416 425 68 440 446 506 517 527 536 24 348 347 348 405 415 FT 439 AR 518 526 535 543 54 (10) 343 342 73 340 339 404 414 423 431 504 515 525 69 FT 332 331 SR3 413 422 SR2 514 524 548 554 559 56 330 42 328 327 326 325 324 323 322 402 412 502 513 523 532 309 308 M6 308 M6 304 M5 302 301 M1 601 602 M8 604 M10 606 M 608 609 27 61 (2 St) 
 263
 259
 254
 248
 FT
 224
 214
 SR1
 122
 113
 M2
 631
 632

 280
 40
 249
 242
 72
 225
 215
 204
 131
 123
 114
 104
 639
 644
256 250 243 235 226 216 M4 139 FT 38 236 227 217 206 146 140 71 125 116 106 652 218 14 152 58 141 134 57 117 (3) 238 37 219 208 157 153 148 142 135 127 118 108 T 1 30 161 158 154 149 143 136 128 119 (4)

CNS's COLD PLUG



### Direct measurement of CNS moderator



J.Fuzi et al: *Physica B* **385-386** (**2**006) 1315

### **Beam extraction system characterization**



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## **ESS INSTRUMENTATION**

- CAMEA
- MIRACLES
- HERITAGE

## CAMEA

- Background
- Analytical calculations





# Miracles

- Design of back end
- Analytical calculations
- Ray tracing simulations
- New analyser geometry





# Heritage polarized reflectometer

- Design of back end
- Analytical calculations

- Conventional reflectometry
- Liquid nose

Vitess simulations

Focusing GISANS option



THANK YOU FOR ATTENTION