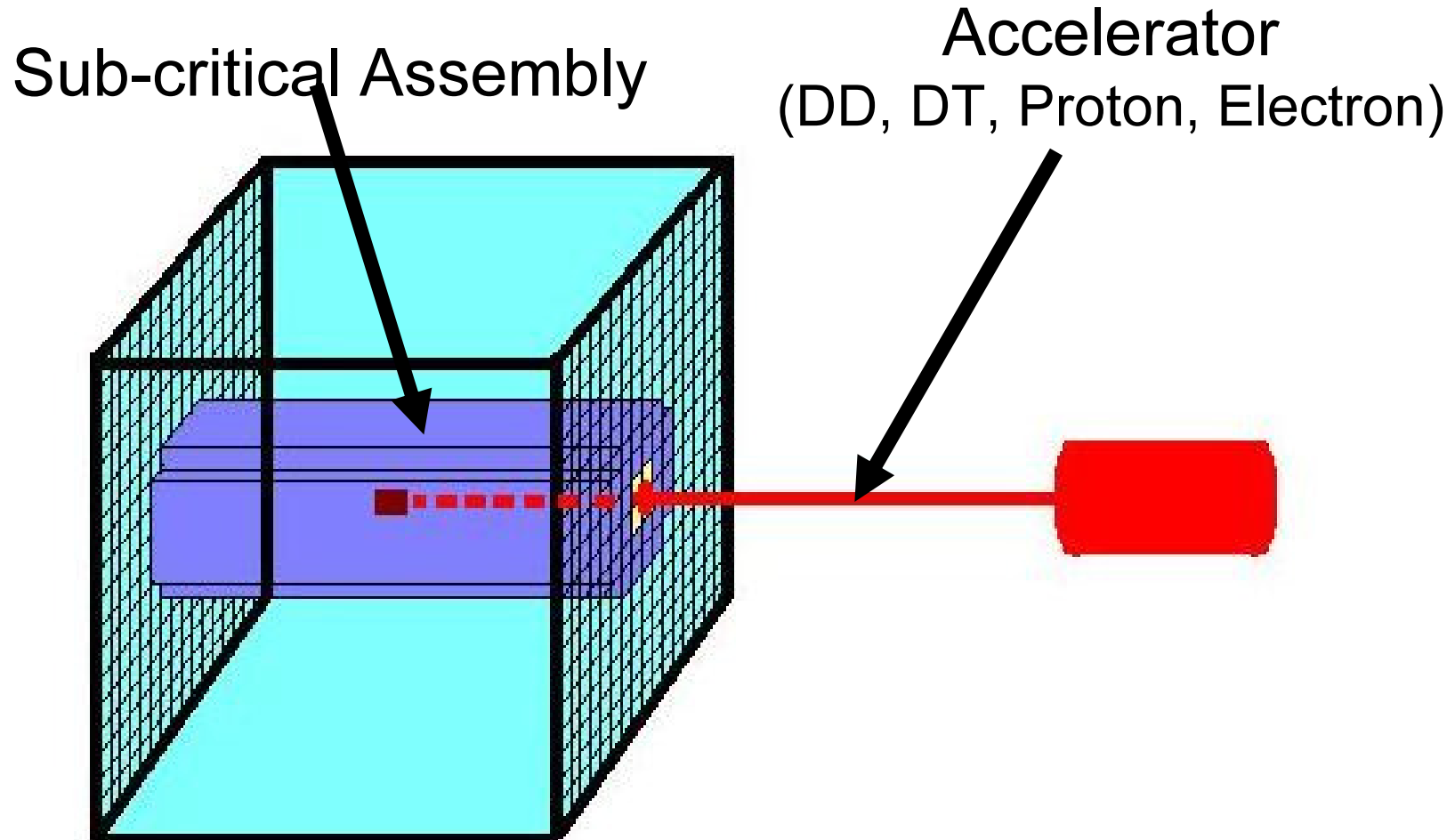


LEU Fuel Utilization in Accelerator Driven Sub-critical systems



Main Feature – Do not need control rods

Actually we have several ADS Projects/Studies under way:

**MYRRHA – 350 MeV Proton Beam, U-Pu Fuel –
52 MW**

VENUS 1

KUCA

Pre TRADE

Etc..

IPEN/MB-01

H5B

MARIA Stand

KIPT

YALINA – Thermal

Yalina Booster

**2005 - Coordinated Research Project (CRP) on
"Analytical and Experimental Benchmark
Analyses of Accelerator Driven Systems (ADS)**

**2006 –
Collaborative
Work on LEU Fuel
Utilization in
ADS Systems**

IPEN/MB-01

H5B

MARIA Stand

KIPT

YALINA – Thermal

Yalina Booster

Collaborative Work on LEU Fuel Utilization in ADS Systems

Countries involved: Argentina, Belarus, Brazil, China, Germany, India, Korea, Poland, Rep. of Serbia, Spain, Ukraine, USA

Facility	Characteristics
IPEN/MB-01	Brazil - Critical facility using fuel pins of UO ₂ 4.34 % enriched – will be made subcritical removing fuel pins – neutron source based on DD/DT accelerator
H5B	Rep. of Serbia - Conceptual design concluded – proposal is based on 10% enriched TVR-S fuel elements and proton beam with U target
MARIA Stand	Poland - Experimental arrangement using neutron beam on Maria Research Reactor – experimental assembly using 10% EK-10 fuel elements
KIPT	Ukraine - Design completed based on 20% enriched WWR-M2 fuel elements, and 200 MeV electron beam (100 kW) and Nat Uranium target
YALINA – Thermal	Belarus Experiments - Experiments completed using 10% EK-10 fuel elements in polyethylene graphite reflected.
Yalina Booster (90%)	Belarus - Experiments completed in 2008 – using 90% and 36% UO ₂ fuel elements in fast zone, natural Uranium in Intermediate zone, and 10% fuel elements in thermal zone
Yalina Booster (36%)	Belarus - Experiments under way – configuration similar to 90%, with 90% fuel elements replaced with 36% fuel elements.
Yalina Booster (21%)	Belarus - Experiments planned for 2009 – configuration similar to 36%, with all 36% fuel elements replaced with 21% fuel elements.

Collaborative Work on LEU Fuel Utilization in ADS Systems

Facility	Situation	References
IPEN/MB-01	Critical Facility exists - onceptual design of ADS concluded - Need accelerator to allow experiments	http://inac2007.com.br/dvd/pdf_dvd/R01_903.pdf
H5B	Conceptual design concluded	http://www.iaea.org/OurWork/ST/NE/NEFW/document s/TMonUseofLEUonADS/PDFPapers/Pesic_Paper.pdf
MARIA Stand	Experimental arrangement using neutron beam on Maria Research Reactor – under construction	http://www.cyf.gov.pl/pdf/ar_2007/nuclear_technology/ Chp_4_nuclear%20technology.pdf
KIPT	Design completed – planned to be constructed in near future	http://www.iaea.org/OurWork/ST/NE/NEFW/document s/TMonUseofLEUonADS/PDFPresentations/Karnauch ov_Presentation.pdf
YALINA – Thermal	1st set of experiments completed	http://www.iaea.org/OurWork/ST/NE/NEFW/document s/TMonUseofLEUonADS/PDFPresentations/Peresson_Presentation.pdf http://www.iaea.org/OurWork/ST/NE/NEFW/document s/TMonUseofLEUonADS/PDFPresentations/Kiayvitska ya_Presentation.pdf
Yalina Booster (90%)	1st set of experiments completed in 2008	http://www.iaea.org/OurWork/ST/NE/NEFW/document s/TMonUseofLEUonADS/PDFPapers/Kiyavitskaya_Pa per.pdf http://www.iaea.org/OurWork/ST/NE/NEFW/document s/TMonUseofLEUonADS/PDFPresentations/Kiayvitska ya_Presentation.pdf
Yalina Booster (36%)	Experiments under way	
Yalina Booster (21%)	Experiments planned for 2009	