56th meeting of the PAC for Particle Physics
January 24, 2022 (Virtual)

The Control System of the Linac-200 Electron Accelerator at JINR
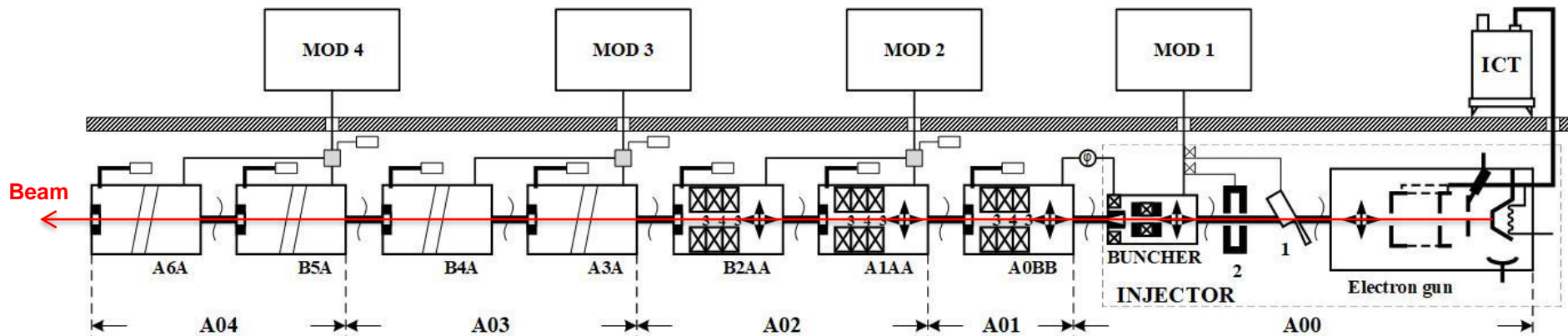
A.N. Trifonov
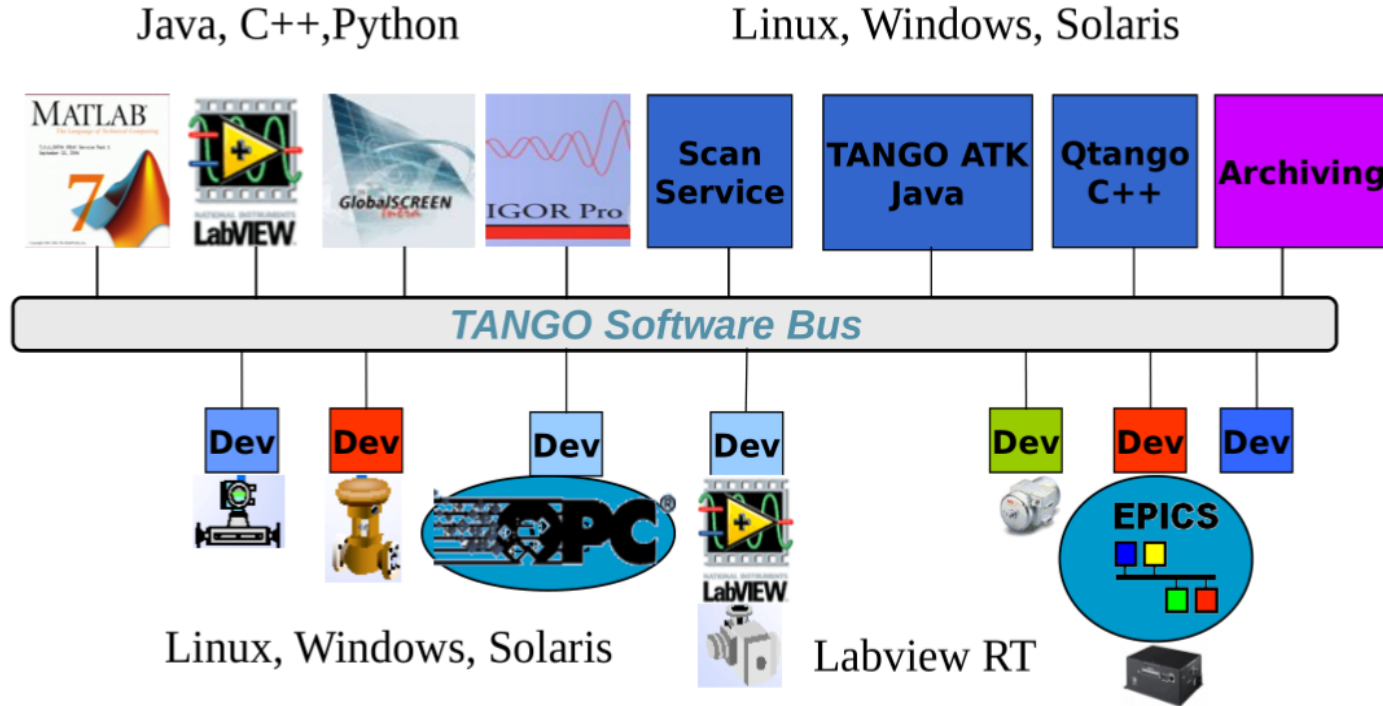
Dzhelepov Laboratory of Nuclear Problems

Joint Institute for Nuclear Research

Linac-200 Electron Accelerator

Parameter	Station	
	A01	A04
Electron energy, MeV	5-25	40-200
Pulse duration, μs	0,1-3,5	
Max. pulse current, mA	60	40
Pulse repetition rate, Hz	1-25	

TANGO-based Control System

Official website: https://www.tango-controls.org/

Control System Concept
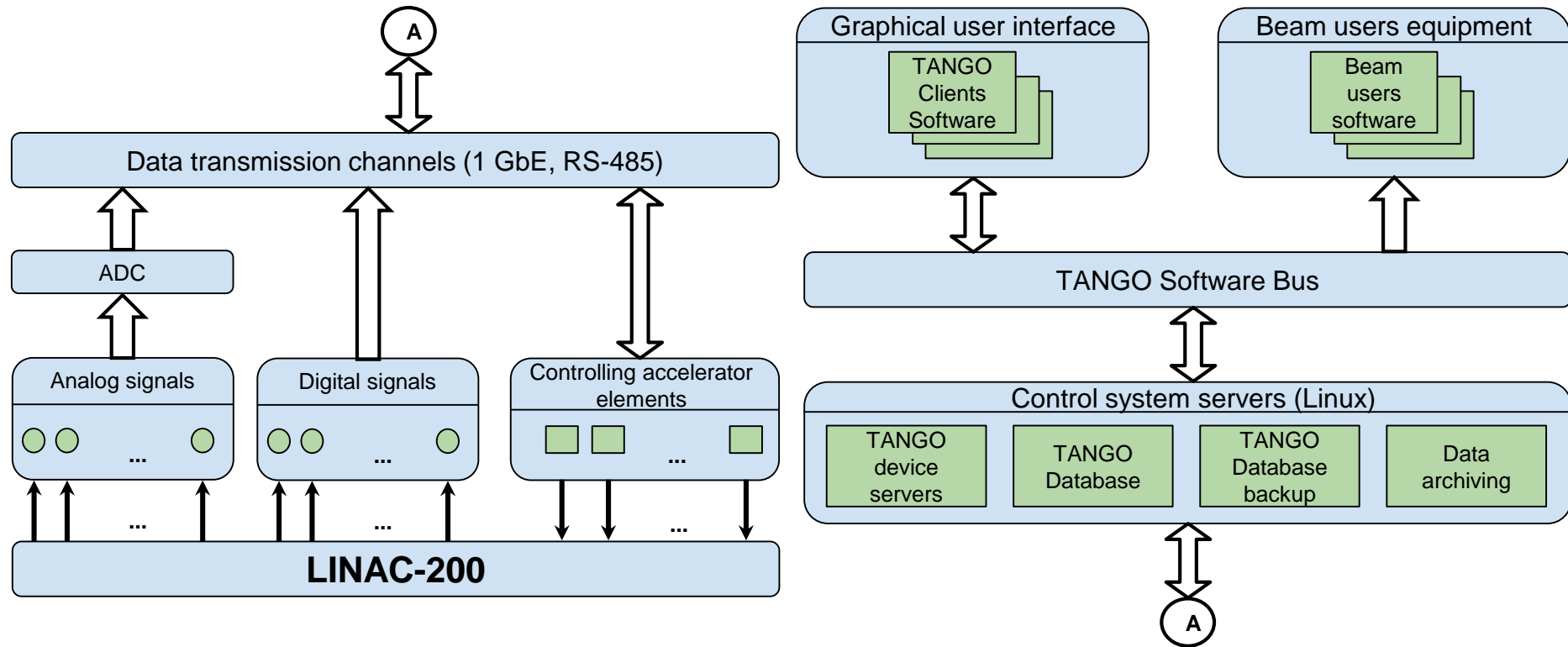
Network Infrastructure
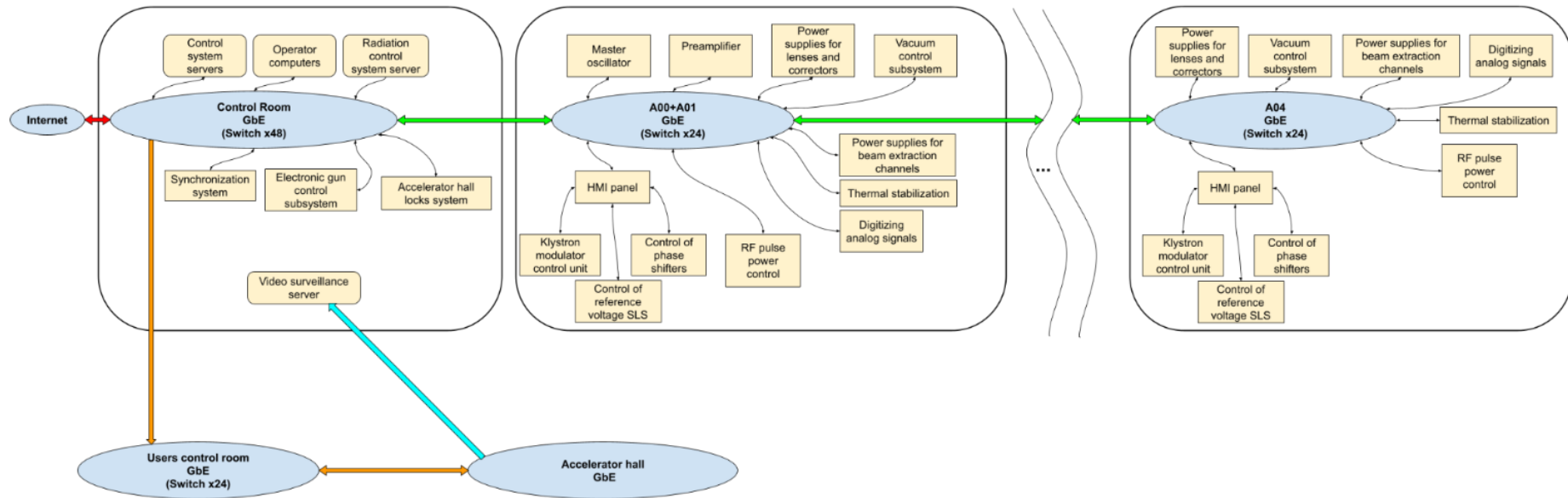
Linac-200 Control System Subsystems

Electron Gun Control System	400-kV DC triode-type electron gun with a thermionic cathode is used. New software for the electron gun control was developed.
Synchronization System Control	New synchronization system by Dialtek will be used. At the moment, a standalone software is used to control the synchronization system. In the future Tango-based software would be developed.
Control of RF System Elements	Master oscillator, preamplifier, klystrons modulator control units, phase shifters.
Vacuum Control System	The vacuum system is controlled by the B&R PLC model X20CP3584. Interaction with the global control system is carried out through the Modbus TCP protocol.
Precise Temperature Regulation System	Its planned to use the Unichiller 100-H circulators by Huber. A special Pilot ONE unit would be used to control the circulators.
Focusing and Steering Magnets Control	Focusing and steering magnets are powered by the KORAD KA3005P and KA6003P power supplies.