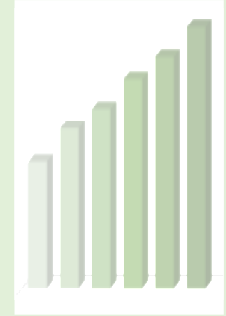


High Energy Physics Research in Bangladesh: Current Landscape, Challenges, and Path to Collaboration

Presented By-

Shamim Ahmed, Manager

BdREN



Connect
Collaborate
Innovate

Event: ATCF9, University of Tsukuba, Center for Computational Sciences, Japan.

Date: 25 September 2025

Research Infrastructure Foundation: BdREN Network & HPC



Nationwide Connectivity

Connects all public universities, research organizations, medical colleges and prominent private universities with a high-capacity 10/40 Gbps backbone network.



Global Research Connection

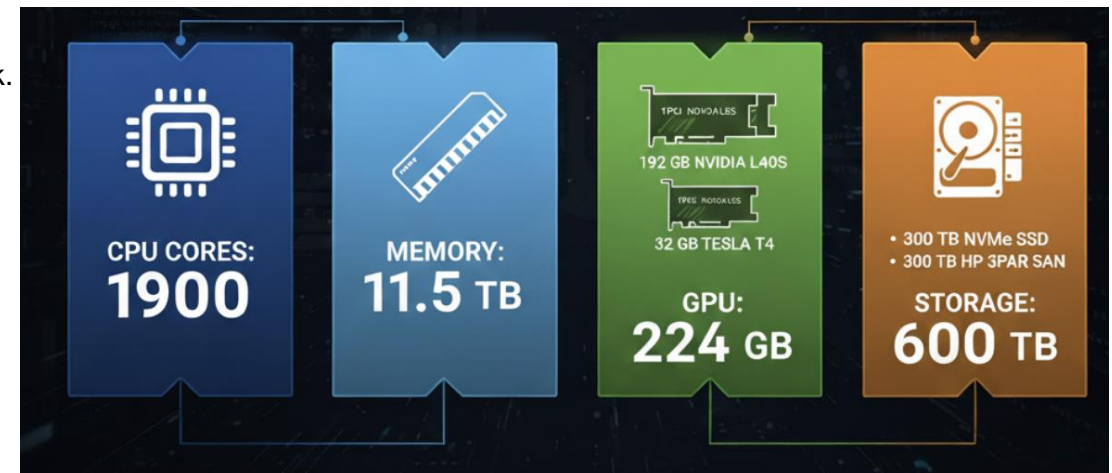
Linked to the Trans-Eurasia Information Network (TEIN) via Singapore's NREN (SingaREN) with a 1Gbps IPLC circuit.



Data Center Support

Comprehensive data center infrastructure with main Data Center (DC) and Disaster Recovery (DR) center to support research and educational institutions

BdREN Data Center Capacity



BdREN at a Glance

Bangladesh Research & Education Network - Comprehensive Digital Infrastructure for Academia

✓ Current Service Portfolio

Core Infrastructure

Internet Connectivity
Web/Email/DNS Hosting
Backup & Disaster Recovery

Educational Technology

LMS (Learning Management)
eduGAIN & Smart Classroom
Content Delivery Network
Workshop Training

Advanced Computing

High Performance Computing
Cloud Storage
Certificate Verification
eFile & Large File Transfer

Specialized Services

Campus Network & eduroam
NREN Maturity Calculator
VPN & IP Telephony
Financial Applications
Event Broadcasting and Streaming

25+

Active Services

100+

Institutes Connected

24/7

Support Coverage

99.99%

Target Availability

➔ Strategic Roadmap & Expansion



**2009
Established**



**Up to 2025
Expansion**



**2026+
Innovation**

Upcoming Developments

Academic Enhancement

University Management Systems, Virtual Labs (VDI), Journal Subscriptions

Digital Certificates

Soft Certificate Generation, Blockchain Security

eduroam Expansion

Enhanced Mobility, Domestic Airports

Enterprise Solutions

ERP Applications, Bulk Email Services

Research & Innovation

Research Repository, Plagiarism Checker

Digital Publishing

eBook Subscriptions

Vision 2026+

Transforming Bangladesh's academic landscape through comprehensive digital infrastructure, research facilitation, and innovative educational technologies

HEP in Bangladesh: A Critical Gap

- A **significant gap exists** in High Energy Physics research, with **no dedicated, active research groups** in Bangladesh.
- Some faculty members are engaged in **collaborative research with international groups**, though detailed information on these collaborations is not available.
- **Strong Bachelor, Masters and PhD programs in physics exist**, but HEP-specific research is very limited.
- **Dedicated HEP infrastructure and laboratories are absent.**
- Several Bangladeshi universities have **MoUs with CERN**, but details of research activities and data access remain unclear.
- A **significant number of HEP theorist** have left the field due to appropriate funding allocations , specially travel funds and scholarship for research students.
- Professors from Bangladeshi universities have **visited CERN for collaboration**, but significant progress in HEP research within the country is yet to be achieved.



Golam Dastegir Al-Quaderi
Professor, Dept. of Physics, University of Dhaka

*"There is currently **no dedicated research group for High Energy Physics** in Bangladesh, which limits development in this critical field."*

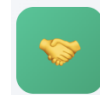
Challenges Facing HEP Research

Key Obstacles in High Energy Physics Development



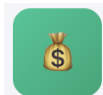
Human Resources

Critical shortage of specialized HEP researchers and experienced mentors



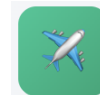
Collaboration Gap

Limited coordination among existing HEP/Particle Physics experts



Funding Constraints

Insufficient financial resources for HEP projects and infrastructure



Brain Drain

Talented researchers migrating abroad for better opportunities

Strategic Vision for HEP Development

- Goals include creating **HEP research opportunities, workshops, and improving infrastructure.**
- Plan to foster **national and international partnerships** to develop Bangladesh's HEP potential.
- Plan to connect with the **LHCONE.**
- Support the HEP community through **funding from local and international projects.**



M Arshad Momen, PhD

Professor, Dept. of Physical Sciences, IUB

*"To advance HEP, we need **focused initiatives, infrastructure, and international collaboration** to build capacity."*

Call for Collaboration

- We invite support from the global HEP community, including partners here at the University of Tsukuba.
- Especially seeking mentorship, training, joint research projects, and infrastructure assistance.

THANK YOU

