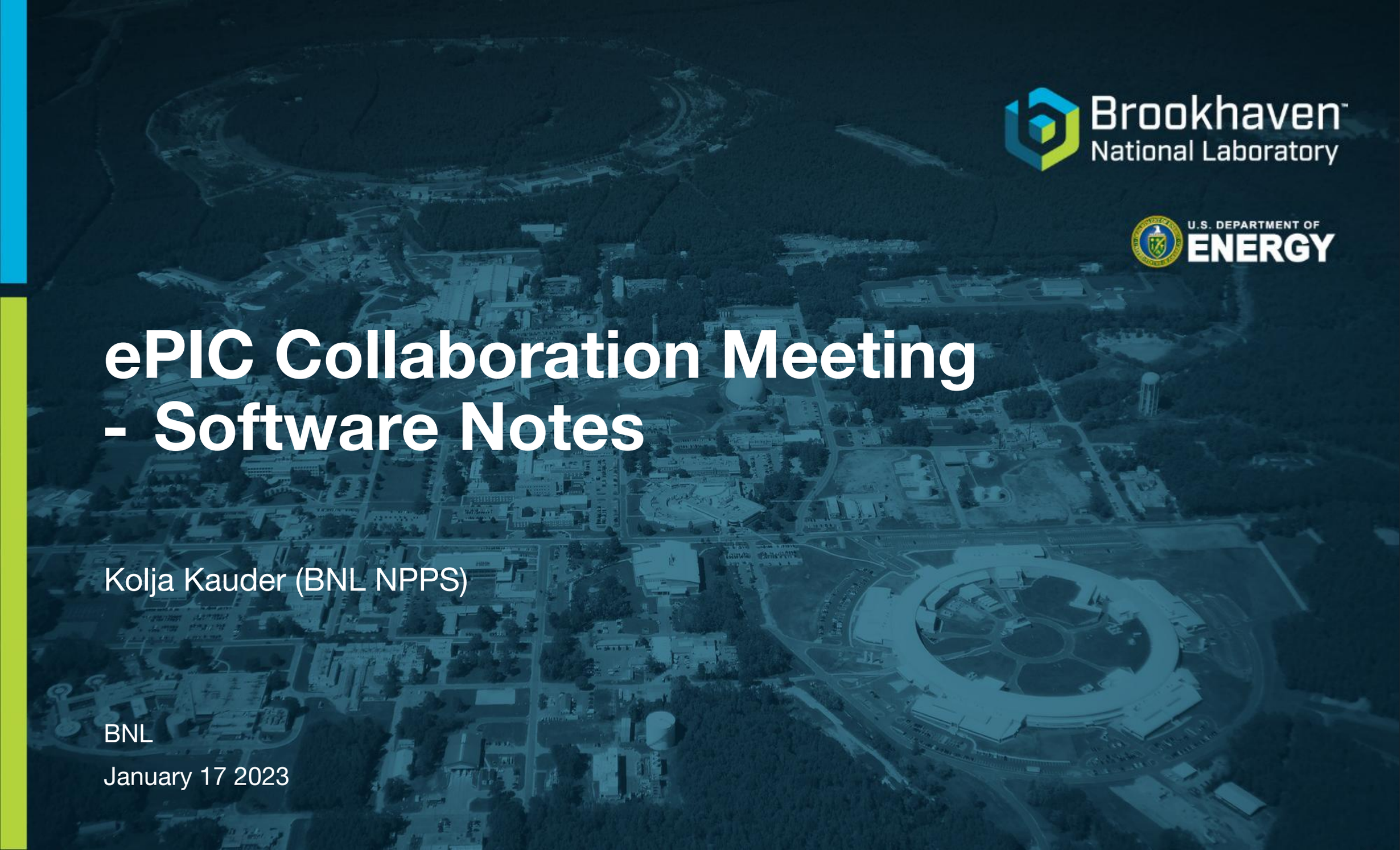

ePIC Collaboration Meeting - Software Notes

Kolja Kauder (BNL NPPS)

BNL

January 17 2023

SimQA is merged into CompSW

Proposed structure with agile sub-groups

- Containers/infrastructure/dependencies/spack
- MCEGs
- Detector Simulations
- Digitization / Streaming Readout Simulation
- Reconstruction
- Physics Algorithms
- Framework
- Large-Scale Simulations / Simulation Campaigns
- Workflow Tools and Environment
- AI/ML
- Heterogeneous Computing
- Training and Documentation
- User Support
- Data and Analysis Preservation

Not to be confused with short-term task forces:

- Clustering
- Jet Reconstruction
- PID
- Tracking
- EICRecon for urgent fixes
- Simulation Campaign Preparation

(plus background embedding)

Some notes on going forward

Communications of the software group with working group need to be improved, in both directions

- Liaison list

Continuous integration/development is important

- and in place / growing

Thomas brought up that sans second detector we're in a rare situation, are there plans to focus specifically on items of self-control like blinding?

Reconstruction is a hot topic - still having unit interface issues etc., crucial to fix for upcoming Ecal review

Simulation Campaign notes

Close to 1M jobs done

- mostly on the OSG (10s of thousands of slots available as opposed to 2k at the labs)
- <1% failure rate, identified problematic sites to avoid
- current requirements add up to a million core-hours, 114 core-years
- Barbara offers NERSC
- Some S3 problems around Thanksgiving, related to key SDCC departure

Next campaign aimed for end of March

Future: PanDA, Rucio, …

Others

Chris Dilks' original SIDIS analysis framework is adopted by more and more PWGS, becoming the de-facto standard

- Support ePIC, ECCE, ATHENA, Delphes
- Data retrieval automation
- Kinematics Reconstruction, Q2 weighting
- Continuous Integration

AI/ML is touched upon in many ways and many works from design optimization to improved kinematic reconstruction to analysis

Many MCEGs still needed,
many still don't have native HepMC3 support

Studies for proposal	ATHENA	ECCE
DVCS in ep	EpIC	MILOU3D
DVCS (incoherent) in ed	EpIC	
DVCS in He-4		TOPEG
TCS in ep	EpIC	EpIC
J/ψ in ep		eSTARlight, IAger
J/ψ in eA		eSTARlight, IAger
ϕ in eAu/Pb	SARTRE, BeAGLE	SARTRE, BeAGLE
$\Upsilon(1S, 2S, 3S)$ in ep	eSTARlight, IAger	
u-channel: ω, ρ in ep	eSTARlight	
$X, Y, \psi(2S)$ in ep→ $J/\psi\pi^+\pi^-p$	elSpectro	elSpectro
Pion Form Factor		DEMPgen
Pion Structure Function		EIC_mesonMC
A_1^n (He-3 double tagging)		DJANGOH

Supplementary slides