

Quantum Observables for Collider Physics 2025

Monday, 7 April 2025

Session 1 (15:00 - 18:00)

-Conveners: Jay Howarth; Ian Low

time	[id] title	presenter
15:00	[3] $H \rightarrow ZZ$ as a double-slit experiment- (20'+10')	AGUILAR SAAVEDRA, Juan Antonio
15:30	Coffee-break	
16:00	[4] 1 Particle - 1 Qubit: Particle Physics Data Encoding for Quantum Machine Learning- (20'+10')	Prof. SPANNOWSKY, Michael
16:30	[5] Maximal Entanglement and Symmetries in Two-Higgs-Doublet Models - (20'+10')	COLORETTI, Guglielmo
17:00	[26] Entanglement and Bell Nonlocality in $\tau^+\tau^-$ at the LHC using Machine Learning for Neutrino Reconstruction - (20'+10')	LOW, Matthew
17:30	[6] Entanglement and Bell nonlocality with bottom-quark pairs at hadron colliders - (20'+10')	Mr UZAN, David

Tuesday, 8 April 2025

Session 1: Session 2 (09:30 - 12:30)

-Conveners: Dorival Goncalves; Ian Low

time	[id] title	presenter
09:30	[10] Spin correlations for di-boson systems: a look from every angle	PELLICCIOLI, Giovanni
10:00	[9] Quantum properties of $H \rightarrow ZZ^*$: precise predictions in the SM and sensitivity to new physics - (20'+10')	LAMBA, Priyanka
10:30	Coffee-break	
11:00	[33] Entanglement and higher order corrections in bipartite qubit systems- (20'+10')	Dr AOUDE, Rafael
11:30	[16] Flavor patterns of fundamental particles from quantum entanglement? - (20'+10')	TRIFINOPOULOS, Sokratis
12:00	[17] Quantum Tomography for flavour oscillation- (20'+10')	CHENG, Kun

Session 1: Session 3 (14:00 - 17:00)

-Conveners: Juan Ramón Muñoz de Nova; Jay Howarth

time	[id] title	presenter
14:00	[12] Magic states of top-quarks - (20'+10')	Prof. WHITE, Martin
14:30	[13] Observation of magic states of top quark pairs produced in proton-proton collisions at $\sqrt{s}=13$ TeV in CMS- (20'+10')	Prof. HINDRICHS, Otto
15:00	[14] Maximum Magic in two-qubit states- (20'+10')	ZHEWEI, Yin
15:30	[15] Magic in QED - (20'+10')	LOW, Ian
16:00	Coffee-break	
16:30	[8] Quantum contextuality of spin-1 massive particles (20'+10')	FABBRICHESI, Marco

Wednesday, 9 April 2025

Session 1: Session 4 (09:30 - 11:30)

-Conveners: Juan Ramón Muñoz de Nova; Jay Howarth

time	[id] title	presenter
09:30	[31] Simulating toponium formation signals at the LHC- (20'+10')	FUKS, Benjamin
10:00	[32] Top-quark pair threshold region in CMS - (20'+10')	GROHSJEAN, Alexander
10:30	Coffee-break	
11:00	[34] Entanglement and top-quark pair threshold region in ATLAS- (20'+10')	SIMPSON, Ethan

Session 1: Session 5 (14:00 - 16:10)

-Conveners: Juan Ramón Muñoz de Nova; Dorival Goncalves

time	[id] title	presenter
14:00	[19] Prospects for quantum process tomography at high energies- (20'+10')	SAKURAI, Kazuki
14:30	[20] Quantum tops at circular lepton colliders - (20'+10')	VRONIDOU, Eleni
15:00	[24] Testing Bell inequalities and probing quantum entanglement at a muon collider - (20'+10')	Mr GAO, Leyun
15:30	[21] Quantum tomography with τ leptons at the FCC-ee, including trace distance- (25'+15')	MARZOLA, Luca

Session 1: Session 5, Part2 (16:40 - 17:40)

-Conveners: Juan Ramón Muñoz de Nova; Dorival Goncalves

time	[id] title	presenter
16:40	[7] Quantum uncertainties with top quarks - (20'+10')	RAVINA, Baptiste
17:10	[30] "Lack of instant realism: the back from the future quantum effect"- (20'+10')	BERNABEU, Jose BERNABEU, Jose

Thursday, 10 April 2025

Session 1: Session 6 (09:30 - 12:30)

-Conveners: Dorival Goncalves; Jay Howarth

time	[id] title	presenter
09:30	[27] Quantum Discord - (20'+10')	MCGINNIS, Navin
10:00	[29] Maximally CHSH-nonlocal states and absolute CHSH nonlocality - (20'+10')	BERNAL GONZÁLEZ, Alexander
10:30	[43] Relativistic Spin Operator - (20'+10')	CABAN, Pawel
11:00	Coffee-break	
11:30	[23] On three-body nonlocality and particle decays - (20'+10')	HORODECKI, Pawel
12:00	[22] Tripartite entanglement and Bell non-locality in loop-induced Higgs boson decays - (20'+10')	MORALES, Roberto Anibal