QEC Summer School Schedule

Week 1

QEC Foundations
Bosonic Code Foundations
Brodgemming OEC Decoders

	1		Mon	Tue	Programming QEC Decoders Wed	Thr	Fri	Sat	Sun						
Time	Activity	Location/Room	4	5	6	7	8	9	10						
7:00AM - 8:55AM	Breakfast	Biddle Mansion - Winter Palace/West Terrace	7	Breakfast											
9:00AM - 10:30AM	Lecture I	New York		Meet @ 8:45AM for First Day Logistics QEC Foundations Steve Flammia, AWS	Programming QEC Decoders James Wootton, IBM Quantum	Bosonic Code Foundations Shruti Puri, Yale University Arne Grimsmo, AWS	Bosonic Code Foundations Shruti Puri, Yale University Arne Grimsmo, AWS	QEC Foundations Steve Flammia, AWS							
10:30AM - 11:000AM	Morning Tea Break	Atrium Lobby		Morning Tea Break											
11:00AM - 12:30PM	Lecture II	New York		Bosonic Code Foundations Shruti Puri, Yale University Arne Grimsmo, AWS	QEC Foundations Steve Flammia, AWS	QEC Foundations Steve Flammia, AWS	Programming QEC Decoders James Wootton, IBM Quantum	Bosonic Code Foundations Shruti Puri, Yale University Arne Grimsmo, AWS							
12:30PM - 1:25PM	Lunch	Biddle Mansion - Winter Palace/West Terrace													
1:30PM - 2:00PM	-Q&A Sessions	New York	ions	Students Arrive	Q&A Session QEC Foundations Steve Flammia, AWS	Q&A Session Programming QEC Decoders James Wootton, IBM Quantum	Q&A Session Bosonic Code Foundations Shruti Puri, Yale University Arne Grimsmo, AWS	Q&A Session Bosonic Code Foundations Shruti Puri, Yale University Arne Grimsmo, AWS	Q&A Session QEC Foundations Steve Flammia, AWS						
2:00PM - 2:30PM				New York	New York	New York	New York	New York	New York	New York		Q&A Session Bosonic Code Foundations Shruti Puri, Yale University Arne Grimsmo, AWS	Q&A Session QEC Foundations Steve Flammia, AWS	Q&A Session QEC Foundations Steve Flammia, AWS	Q&A Session Programming QEC Decoders James Wootton, IBM Quantum
2:30PM - 4:30PM	Unstructured Time	N/A		Unstructured Time/ Office Hours with Admin Team for on-site support		Unstructured Time	Unstructured Time	Unstructured Time	Dinner: 6:00PM - 9:00PM						
4:30PM - 5:00PM	Open Problems,	Now York		Unstructured Time	Unstructured Time	Open Problems - Part I QEC Foundations Steve Flammia, AWS	Introduction to QEC Framework @ 4:00PM Drew Vandeth, IBM Quantum	Open Problems - Part II Bosonic Code Foundations Shruti Puri, Yale University Arne Grimsmo, AWS							
5:00PM - 5:30PM	Student Talks, Crazy Ideas	New York		Offstructured fifte		Open Problems - Part I Bosonic Code Foundations Shruti Puri, Yale University Arne Grimsmo, AWS	Crazy Ideas Session IDA Rules Drew Vandeth, IBM Quantum	Open Problems - Part II QEC Foundations Steve Flammia, AWS							
5:30PM - 6:00PM	Unstructured Time	N/A													
6:00PM - 6:55PM	Dinner	Biddle Mansion - Winter Palace/West Terrace	4th of July Event	Opening Dinner @ Mary Duke Ballroom Opening Remarks Zaira Nazario, IBM Research	Dinner	Social Event: Women in Quantum Social & Dinner	Din	ner							
7:00PM - 8:00PM	Guest Lectures/Socia Time	ial New York	@ Duke Terrace	Keynote Speaker, Daniel Gottesman, UMD Mary Duke Ballroom	Guest Lecture Natalie Brown, Quantinuum	@ West Terrace	Guest Lecture Liang Jiang, The University of Chicago	Unstructured Time							
8:00PM - 9:00PM	Social	Atrium Lobby		Speaker Social	Speaker Social		Speaker Social								

QEC Summer School Schedule

Week 2

Fault Tolerance - Logistical Gates
Experimental QEC - Bosonic Codes

Programming OEC Deceders

Programming QEC Decoders										
Time	Activity	Location/Room	Mon	Tue	Wed	Thr	Fri	Sat	Sun	
	-	·	11	12	13	14	15	16	17	
7:00AM - 8:55AM 9:00AM - 10:30AM		Winter Palace New York	Fault Tolerance - Logical Gates Ben Brown, IBM Quantum Daniel Litinski, PsiQuantum	Programming QEC Decoders James Wootton, IBM Quantum	Breakfast Experimental QEC - Bosonic Codes Alec Eickbusch & Volodymyr Sivak, Yale University	Experimental QEC - Bosonic Codes Alec Eickbusch, Yale University Volodymyr Sivak, Yale University	Fault Tolerance - Logical Gates Ben Brown, IBM Quantum Daniel Litinski, PsiQuantum			
10:30AM - 11:000AM	Morning Tea Break	Atrium Lobby			Morning Tea Break	Oniversity				
11:00AM - 12:30PM	Lecture II	New York	Experimental QEC - Bosonic Codes Michel Devoret, Alec Eickbusch, & Volodymyr Sivak, Yale University	Fault Tolerance - Logical Gates Ben Brown, IBM Quantum Daniel Litinski, PsiQuantum	Fault Tolerance - Logical Gates Ben Brown, IBM Quantum Daniel Litinski, PsiQuantum	Programming QEC Decoders James Wootton, IBM Quantum	Experimental QEC - Bosonic Codes Alec Eickbusch & Volodymyr Sivak, Yale University			
12:30PM - 1:25PM	Lunch	Winter Palace			Lunch	•				
1:30PM - 2:00PM	0040	New York	Q&A Session Fault Tolerance - Logical Gates Ben Brown, IBM Quantum Daniel Litinski, PsiQuantum	Q&A Session Programming QEC Decoders James Wootton, IBM Quantum	Q&A Session Experimental QEC - Bosonic Codes Alec Eickbusch & Volodymyr Sivak, Yale University	Q&A Session Experimental QEC - Bosonic Codes Alec Eickbusch & Volodymyr Sivak, Yale University	Q&A Session Fault Tolerance - Logical Gates Ben Brown, IBM Quantum Daniel Litinski, PsiQuantum	Breakfast: 7:00AM - 9:30AM @Winter Palace Lunch: 11:00AM - 11:15AM Lunch will be a boxed lunch provided in the Atrium Hudson River Cruise Bus Departs: 11:30AM Cruise: 1:00PM - 4:30PM	Study/Off Breakfast: 7:00AM - 9:30AM @Winter Palace Lunch: 12:00PM - 1:30PM @Winter Palace	
2:00PM - 2:30PM	Q&A Sessions	New York	Q&A Session Experimental QEC - Bosonic Codes Michel Devoret, Alec Eickbusch, & Volodymyr Sivak, Yale	Q&A Session Fault Tolerance - Logical Gates Ben Brown, IBM Quantum Daniel Litinski. PsiQuantum	Q&A Session Fault Tolerance - Logical Gates Ben Brown, IBM Quantum Daniel Litinski. PsiOuantum	Q&A Session Programming QEC Decoders James Wootton, IBM Quantum	Q&A Session Experimental QEC - Bosonic Codes Alec Eickbusch & Volodymyr Sivak, Yale University			
2:30PM - 4:30PM	Unstructured Time	N/A				Dinner: 6:00PM - 9:00PM @ Cellar 49 (Lower level of				
4:30PM - 5:00PM	Open Problems,	roblems, itudent Talks,	New York	Student Talks A Timo Hillmann	Open Problems - Part I Experimental QEC - Bosonic Codes Alec Eickbusch & Volodymyr Sivak, Yale University	— Crazy Ideas Session	Open Problems - Part II Fault Tolerance - Logical Gates Ben Brown, IBM Quantum Open Problems - Part II Experimental QEC - Bosonic Codes Alec Eickbusch & Volodymyr Sivak, Yale University	Biddle Mansion)		
5:00PM - 5:30PM	Student Talks, Crazy Ideas		Xanda Kolesnikow Daniel Miller Peter-Jan Derks	Armands Strikis Aurélie Denys Kaavya Sahay	Open Problems - Part I Fault Tolerance - Logical Gates Ben Brown, IBM Quantum Daniel Litinski, PsiOuantum	Guzy recas session				
5:30PM - 6:00PM	Unstructured Time	N/A								
6:00PM - 6:55PM	Dinner	Winter Palace			Dinner					
7:00PM - 8:00PM	Guest Lectures/Social Time	New York	Guest Lecture Chen Wang, UMass Amherst	Unstructured Time	Unstructured Time	Unstructured Time	Guest Lecture Guanyu Zhu, IBM Quantum			
8:00PM - 9:00PM	Social	Atrium Lobby	Speaker Social				Speaker Social			

QEC Summer School Schedule

Week 3

QEC Decoding

Experimental QEC - Trapped Ions

Programming QEC Simulations

Programming QEC Simulations										
Time	Activity	Location/Room	Mon	Tue	Wed	Thr	Fri	Sat	Sun	
		Winter	18	19	20	21	22	23	24	
7:00AM - 8:55AM	Breakfast	Palace/West Terrace	Breakfast @ Library	and the Music Room (Rooms b						
9:00AM - 10:30AM	Lecture I	New York	QEC Decoding Christopher Chubb, ETH Zurich Earl Campbell, Riverlane & University of Sheffield	Programming QEC Simulations Andrew Cross, IBM Quantum	Experimental QEC - Trapped Ions Ken Brown, Duke University Ciaran Ryan-Anderson, Quantinuum	Experimental QEC - Trapped Ions Ken Brown, Duke University Ciaran Ryan-Anderson, Quantinuum	QEC Decoding Christopher Chubb, ETH Zurich Earl Campbell, Riverlane & University of Sheffield			
10:30AM - 11:000AM	Morning Tea Break	Atrium Lobby	Morning Tea Break					-		
11:00AM - 12:30PM	Lecture II	New York	Experimental QEC - Trapped Ions Ken Brown, Duke University Ciaran Ryan-Anderson, Quantinuum	QEC Decoding Christopher Chubb, ETH Zurich Earl Campbell, Riverlane & University of Sheffield	QEC Decoding Christopher Chubb, ETH Zurich Earl Campbell, Riverlane & University of Sheffield	Programming QEC Simulations Andrew Cross, IBM Quantum	Experimental QEC - Trapped Ions Ken Brown, Duke University Ciaran Ryan-Anderson, Quantinuum			
12:30PM - 1:25PM	Lunch	Winter Palace/West Terrace	Lunch @ Library a	nd the Music Room (Rooms bef	fore Winter Palace)	Lu	nch			
1:30PM - 2:00PM		New York	Q&A Session QEC Decoding Christopher Chubb, ETH Zurich Earl Campbell, Riverlane & University of Sheffield	Q&A Session Programming QEC Simulations Andrew Cross, IBM Quantum	Q&A Session Experimental QEC - Trapped Ions Ken Brown, Duke University Ciaran Ryan-Anderson, Ouantinuum		Q&A Session QEC Decoding Christopher Chubb, ETH Zurich Earl Campbell, Riverlane & University of Sheffield	Breakfast: 7:00AM - 9:30AM @ Winter Palace Social Event:	Study/Off Breakfast: 7:00AM - 9:30AM @ Winter Palace Lunch: 12:00PM - 1:30PM @ Winter Palace	
2:00PM - 2:30PM	- Q&A Sessions	New York	Q&A Session Experimental QEC - Trapped Ions Ken Brown, Duke University Ciaran Ryan-Anderson, Quantinuum	Q&A Session QEC Decoding Christopher Chubb, ETH Zurich Earl Campbell, Riverlane & University of Sheffield	Q&A Session QEC Decoding Christopher Chubb, ETH Zurich Earl Campbell, Riverlane & University of Sheffield	- Crazy Ideas Session	Q&A Session Experimental QEC - Trapped Ions Ken Brown, Duke University Ciaran Ryan-Anderson, Quantinuum	Scavenger Hunt 10AM - 12PM Riverview Room Lunch: 12:00PM - 1:30PM @ Winter Palace		
2:30PM - 4:30PM	Unstructured Time	N/A	Unstructi	ured Time		Unstructured Time	@ Library	Dinner: 6:00PM - 9:00PM @ Library and the Music Room (Rooms before Winter Palace)		
	Time	New York				004600000000000000000000000000000000000			(Rooms before winter Palace)	
4:30PM - 5:00PM	Open Problems, Student Talks, Crazy Ideas	Open Felix Thomse Problems, Friederike Bu Student Talks, Crazy Ideas Basudha Srivas Felix Thomse Friederike Bu Varun Seshac Marco Ballar Basudha Srivas	Student Talks @ 4:00PM Felix Thomsen Friederike Butt	Student Talks @ 4:00PM Arthur Pesah Julian Ding David Scheer	Unstructured Time	Q&A Session Experimental QEC - Trapped Ions Ken Brown, Duke University Ciaran Ryan-Anderson, Quantinuum	Open Problems - Part II	(Rooms before Winter Palace)		
5:00PM - 5:30PM			Marco Ballarin Basudha Srivastava Mark Webster	Georgia Nixon Ohad Lib Ross Shillito	Open Problems - Part I Experimental QEC - Trapped Ions Ken Brown, Duke University Ciaran Ryan-Anderson, Quantinuum	Q&A Session Programming QEC Simulations Andrew Cross, IBM Quantum	Open Problems - Part II Experimental QEC - Trapped Ions Ken Brown, Duke University Ciaran Ryan-Anderson, Quantinuum			
5:30PM - 6:00PM	Unstructured Time	N/A		1	Unstructured Time	1				
6:00PM - 6:55PM		Winter Palace/West Terrace	Dinner	Dinner @ Winter Palace	Dinner	Social Event: Diversity Panel @ Mary Duke Ballroom (A)	Dinner			
7:00PM - 8:00PM	Guest Lectures/Social Time	New York	Guest Lecture Aleksander Kubica, AWS	Unstructured Time	Guest Lecture Michael Vasmer, Perimeter Institute	Dinner @ Winter Palace	Guest Lecture Leo DiCarlo, TU Delft			
8:00PM - 9:00PM	M Social	Atrium Lobby	Speaker Social		Speaker Social	Unstructured Time	Speaker Social			

QEC Summer School Schedule
Week 4

LDPC Codes

Experimental QEC - Superconducting Qubits
Programming QEC Simulations

					Programming QEC Simulations	5				
Time	Activity	Location/Room	Mon	Tue	Wed	Thr	Fri	Sat	Sun	
7:00AM - 8:55AM	Breakfast	Winter Palace/West	25 Brea	26 kfast	27 Breakfast @ Winter Palace	28 Breakfast @ Winter Palace Lecture begins at 8:30AM	29 Breakfast	30	31	
9:00AM - 10:30AM	Lecture I	Terrace New York	LDPC Codes Nikolas Breuckmann, UCL Nicolas Delfosse, Microsoft	Programming QEC Simulations Andrew Cross, IBM Quantum	Experimental QEC - Superconducting Qubits Maika Takita & Antonio Córcoles, IBM Quantum Andreas Wallraff, ETH Zurich	Experimental QEC - Superconducting Qubits Maika Takita, IBM Quantum Antonio Córcoles, IBM Quantum Andreas Wallraff, ETH Zurich	LDPC Codes Nikolas Breuckmann, UCL Nicolas Delfosse, Microsoft			
10:30AM - 11:000AM	Morning Tea Break	Atrium Lobby		Morning Tea Break	1	- Lecture begins at 10:00AM Programming QEC	Morning Tea Break			
11:00AM - 12:30PM	Lecture II	New York	Experimental QEC - Superconducting Qubits Maika Takita & Antonio Córcoles, IBM Quantum Andreas Wallraff, ETH Zurich	LDPC Codes Nikolas Breuckmann, UCL Nicolas Delfosse, Microsoft	LDPC Codes Nikolas Breuckmann, UCL Nicolas Delfosse, Microsoft	Simulations Andrew Cross, IBM Quantum Bus leaves at 11:45AM	Experimental QEC - Superconducting Qubits Maika Takita & Antonio Córcoles, IBM Quantum Andreas Wallraff, ETH Zurich			
12:30PM - 1:25PM	Lunch	Winter Palace/West Terrace	Lui	nch	Lunch @ Winter Palace	Social Event:	Lunch			
1:30PM - 2:00PM		New York	Q&A Session LDPC Codes Nikolas Breuckmann, UCL Nicolas Delfosse, Microsoft	Q&A Session Programming QEC Simulations Andrew Cross, IBM Quantum	Q&A Session Experimental QEC - Superconducting Qubits Maika Takita & Antonio Córcoles, IBM Quantum Andreas Wallraff, ETH Zurich	IBM Research BBQ & Lab Tour at IBM Yorktown	Q&A Session LDPC Codes Nikolas Breuckmann, UCL Nicolas Delfosse, Microsoft	Breakfast: 7:00AM - 9:30AM		
2:00PM - 2:30PM	— Q&A Sessions		New York	Q&A Session Experimental QEC - Superconducting Qubits Maika Takita & Antonio Córcoles, IBM Quantum Andreas Wallraff, ETH Zurich	Q&A Session LDPC Codes Nikolas Breuckmann, UCL Nicolas Delfosse, Microsoft	Q&A Session LDPC Codes Nikolas Breuckmann, UCL Nicolas Delfosse, Microsoft	n, UCL	Q&A Session Experimental QEC - Superconducting Qubits Maika Takita & Antonio Córcoles, IBM Quantum Andreas Wallraff, ETH Zurich	@ Winter Palace Lunch: 12:00PM - 1:30PM @ Winter Palace	Students Depart Breakfast: 7:00AM - 9:30AM
2:30PM - 4:30PM	Unstructured Time	N/A New York	Unstructu	ured Time	ZX calculus 101 @ 2:30PM Alex Townsend-Teague New York Room Group breakouts 3-4PM (See room assignment in Atrium) Unstructured Time		Unstructured Time			
4:30PM - 5:00PM	Open	non you	Student Talks @ 4:00PM Matt McEwen	Student Talks @ 4:00PM Nathan Lacroix Zohar Schwartzman-Nowik	Capacities for Correcting Quantum Errors Vikesh Siddhu, IBM Quantum		Open Problems - Part II LDPC Codes Nikolas Breuckmann, UCL Nicolas Delfosse, Microsoft			
5:00PM - 5:30PM	Problems, Student Talks, Crazy Ideas	ks, New York Joshua Ramette Da Arkin Tikku Boris Paul Herringer Shrav	Daniel Solis Boris Varbanov Shraddha Singh Alex Townsend-Teague	Open Problems - Part I Experimental QEC - Superconducting Qubits Maika Takita & Antonio Córcoles, IBM Quantum Andreas Wallraff, ETH Zurich		Open Problems - Part II Experimental QEC - Superconducting Qubits Maika Takita & Antonio Córcoles, IBM Quantum Andreas Wallraff, ETH Zurich				
5:30PM - 6:00PM	Unstructured Time	N/A	Unstructured Time		Open Problems - Part I LDPC Codes Nikolas Breuckmann, UCL Nicolas Delfosse, Microsoft		tured Time			
6:00PM - 6:55PM	l Dinner	Winter Palace/West Terrace	Dinner		Dinner @ Winter Palace	Dinner @ Winter Palace	6:00PM - 7:30PM & Keyno	Closing Dinner & Keynote Speaker		
7:00PM - 8:00PM	Guest Lectures/Social Time		Guest Lecture Anirudh Krishna, Stanford University	Guest Lecture Craig Gidney, Google on Webex	Guest Lecture, Ted Yoder, IBM Quantum	Unstructured Time	@ West Terrace Dinner:	Sergey Bravyi, IBM Quantum @ Carriage House		
8:00PM - 9:00PM		Atrium Lobby	Speaker Social	Speaker Social	Speaker Social		7:30PM - 9:00PM @Winter Palace	Speaker Social		
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