TAMU-Princeton-Baylor Summer School on Quantum Science and Engineering, Fest celebrating Prof. Lu Sham 80th birthday

Casper College, Casper, Wyoming, July 22-28, 2018

Sunday, July 22

2:30 PM: Snack food is being delivered to the Residence Hall kitchen (3rd floor)

5:00 PM: Dinner is set in the Residence Hall kitchen (3rd floor) and stored in fridge for late arrivals

Monday morning, July 23, 2018

All Talks will be in the Wold Physical Science Center, Room 103 (**PS103**)

7:00 – 8:00 AM	BREAKFAST	Tobin Cafeteria on bottom floor of Student Center and UWC (UU building)
PS103	Session chair: Marlan Scully	
8:15 – 8:20 AM	Marlan Scully	Welcome
8:20 – 9:00 AM	Michael Benedik *Vice Provost, TAMU*	History and Technology of DNA Sequencing
9:00 – 9:30 AM	Robert Brick, *TAMU*	Energy flow into and through living organisms
9:30 – 10:00 AM	Jonathan Hu, *Baylor*	TERS imaging of single-stranded DNA
10:00 – 10:30 AM	BREAK	
Session chair: Aleksei Zheltikov		
10:30 – 11:00 AM	Alexei Sokolov, *TAMU*	Coherent Raman spectroscopy: from stand-off detection to nano-sensing
11:00 – 11:30 AM	Philip Hemmer, *TAMU*	Biosensing with nano-diamonds and nano-phosphors
11:30 – 11:50 AM	Quan Li, *The Chinese University of Hong Kong*	Enabling diamond quantum sensing at elevated temperatures
11:50 – 12:20 PM	Carlo Piermarocchi *Michigan State University*	Closed loop control and spin models of cancer cells
12:20 PM	LUNCH	Tobin Cafeteria (bottom floor UU Bldg.)

Monday evening, July 23, 2018
Dinner: 6:30 PM, outside PS103

PS103	Session chair: Philip Hemmer	
7:00 – 7:30 PM	Aleksei Zheltikov, *TAMU*	Subcycle pulses and multioctave supercontinua in the mid-infrared
7:30 – 8:00 PM	Zhenrong Zhang, *Baylor*	Photoreactions of Monolayer MoS_2
8:00 – 8:20 PM	Zhenhuan Yi, *TAMU*	IR can help Coherent Raman Scattering
8:20 – 8:50 PM	BREAK	
Session chair: Zhenrong Zhang		
8:50 – 9:10 PM	Benjamin Strycker, *Baylor*	Raman Spectroscopy of Mold Spores
9:10 – 9:35 PM	Narangerel Altangerel *TAMU/ARL*	Early, in vivo, detection of abiotic plant stress responses via Raman spectroscopy
9:35 – 9:55 PM	Kai Wang, *TAMU*	Wide-field CARS microscopy
9:55 – 10:10 PM	Tuguldur Begzjav, *TAMU*	Enhanced molecular chiral signals via quantum coherence

Tuesday morning, July 24, 2018

7:00 – 8:00 AM	BREAKFAST	Tobin Cafeteria (bottom floor UU Bldg.)
PS103	Session chair: Leonid Butov	
8:15 – 8:45 AM	Lu Sham, *University of California San Diego*	A bit of fun with quantum
8:45 – 9:15 AM	Wolfgang Schleich, *Ulm*	Factorization of numbers, Schrödinger cats and the Riemann hypothesis
9:15 – 9:45 AM	Duncan Steel *University of Michigan*	Quantum Photonics and Coherent Control of Semiconductor Dot Electron and Nuclear Spins
9:45 – 10:05 AM	Hanan Dery *University of Rochester*	Probing many-body interactions through excitons in monolayer transition-metal dichalcogenides
10:05 – 10:30 AM	POSTER SESSION / BREAK	
Session chair: Duncan Steel		
10:30 – 11:00 AM	Leonid Butov, *UCSD*	Phenomena in condensate of indirect excitons
11:00 – 11:20 AM	John Schaibley *University of Arizona*	Optical Spectroscopy of Excitons in 2D Semiconductor Heterostructures
11:20 – 11:50 AM	Cristiano Ciuti, Paris Diderot University, France	Cavity-controlled magnetotransport of 2D electron gas
11:50 – 12:20 PM	Xiaodong Xu *University of Washington*	2D Magnets and Heterostructures
12:20 PM	LUNCH	Tobin Cafeteria (bottom floor UU Bldg.)

Tuesday evening, July 24, 2018

Dinner: 6:30 PM, outside PS103

PS103	Session chair: John Schaibley	
7:00 – 7:30 PM	Xiaoqin Li, *UT Austin*	Intrinsic Valley Dynamics in Atomically Thin Semiconductors
7:30 – 8:00 PM	Wang Yao *University of Hong Kong*	Valleytronics in van der Waals heterostructures
8:00 – 8:30 PM	Michael Fogler, *UCSD*	Theory of entangled-plasmon-pair generation in graphene
8:30 – 9:00 PM	BREAK	
Session chair: Da-Wei Wang		
9:00 – 9:30 PM	Yong Wang *Nankai University*	Magnetostatics of chiral ferromagnetic film and its implication on atom chips
9:30 – 10:30 PM	Poster Presentations	All Posters

Wednesday morning, July 25, 2018

7:00 – 8:00 AM	BREAKFAST	Tobin Cafeteria (bottom floor UU Bldg.)
PS103	Session chair: Wolfgang Schleich	
8:15 – 8:45 AM	Marlan Scully, *TAMU*	From Special to General Relativity with Unruh and Hawking
8:45 – 9:15 AM	Gerard Kennedy *Univ. of Southampton*	Introduction to General Relativity
9:15 – 9:45 AM	Stephen Fulling, *TAMU*	Temperature, Periodicity, and Horizons
9:45 – 10:05 AM	Jonathan Ben-Benjamin *TAMU*	Unruh Radiation in Phase Space
10:05 – 10:25 AM	Anatoly Svidzinsky *TAMU*	Excitation of atom by accelerated mirror and equivalence principle
10:25 – 10:50 AM	POSTER SESSION / BREAK	
Session chair: Stephen Fulling		
10:50 – 11:20 AM	Girish Agarwal, *TAMU*	Superresolution microscopy
11:20 – 11:40 AM	Zhedong Zhang, *TAMU*	Quantum Statistical Theory for Fröhlich Condensate
11:40 – 12:00 PM	Sheng-Wen Li, *TAMU*	Photon statistics of the lasing quantum heat engine
12:00 – 12:20 PM	Reed Nessler *TAMU/Baylor*	Entropy: relative, absolute, discrete, continuous
12:20 PM	LUNCH	Tobin Cafeteria (bottom floor UU Bldg.)

5:00 PM, BBQ Dinner, Gateway Center (GW) 221/225

Jon Mogford, *Vice Chancellor for Research, Texas A&M University System*

Lu Sham, *University of California San Diego*, "Amazing people encountered in my physics life"

Thursday morning, July 26, 2018

7:00 – 8:00 AM	BREAKFAST	Tobin Cafeteria (bottom floor UU Bldg.)
PS103	Session chair: Sen Yang	
8:15 – 8:45 AM	Leon Cohen, *CUNY*	M-indeterminate distributions and the Aharanov paradox in quantum mechanics
8:45 – 9:15 AM	Edwin Barnes *Virginia Tech*	Robust quantum control for quantum technologies
9:15 – 9:45 AM	Wen Yang, *Beijing Computational Science Research Center*	Quantum sensing enhanced by adaptive periodic quantum control
9:45 – 10:15 AM	Hailin Wang *University of Oregon*	Phononic Quantum Networks of Solid-State Spins in Diamond
10:15 – 10:40 AM	POSTER SESSION / BREAK	
Session chair: Edwin Barnes		
10:40 – 11:05 AM	Ren-Bao Liu *The Chinese University of Hong Kong*	Single-spin nuclear magnetic resonance at quantum back-action limit
11:05 – 11:30 AM	Sen Yang, *The Chinese University of Hong Kong*	Towards measurement induced quantum state engineering
11:30 – 11:55 AM	Zheng-Hong Li *Shanghai University*	Counterfactual Unknown Quantum States Exchange
11:55 – 12:20 PM	Lukas Cywinski, *Institute of Physics, Warsaw*	Environmental noise spectroscopy with multiple qubits
12:20 PM	LUNCH	Tobin Cafeteria (bottom floor UU Bldg.)

Thursday evening, July 26, 2018

Dinner (pizza): 6:30 PM, outside PS103

PS103	Session chair: Ren-Bao Liu	
7:00 – 7:30 PM	Da-Wei Wang *Zhejiang University*	Chiral quantum optics: photons, atoms and qubits
7:30 – 8:00 PM	Sophia Economou *Virginia Tech*	Photonic graph state generation from spin-photon interfaces
8:00 – 8:30 PM	Pochung Chen, *National Tsing Hua University*	Tensor network for many-body physics
8:30 – 9:00 PM	BREAK	
Session chair: Sophia Economou		
9:00 – 9:30 PM	Joaquin Fernandez-Rossier *Iberian Laboratory, Braga*	Magnons in ferromagnetic two dimensional CrI_3
9:30 – 9:55 PM	Tao Peng, *TAMU*	Imaging through strong scattering media
9:55 – 10:20 PM	Thomas Smith *University of Maryland*	The Effect of Optical Turbulence on Two-photon Interference

Friday morning, July 27, 2018

7:00 – 8:00 AM	BREAKFAST	Tobin Cafeteria (bottom floor UU Bldg.)
PS103	Session chair: Weng Chow	
8:15 – 8:45 AM	Ed Fry, *TAMU*	"Light scattering at 0°" "Integrating Cavity Spectroscopy"
8:45 – 9:15 AM	Olga Kocharovskaya *TAMU*	Spectral/temporal control of an x-ray radiation in a resonant medium
9:15 – 9:35 AM	Elena Kuznetsova, *TAMU*	Spectral enhancement of X-ray radiation by resonant Mossbauer absorber with spatial gradient of nuclear transition frequency
9:35 – 9:55 AM	Kyong Chol Han, *TAMU*	Amplification of a train of attosecond pulses
9:55 – 10:20 AM	POSTER SESSION / BREAK	
Session chair: Ed Fry		
10:20 – 10:50 AM	Weng Chow, *Sandia National Laboratories*	Frequency comb generation from spontaneous mode locking in a semiconductor laser
10:50 – 11:20 AM	Hai-Qing Lin, *Beijing Computational Science Research Center*	Studies on the Rabi Model
11:20 – 11:50 AM	Michael Leuenberger *Univ. of Central Florida*	Defects in transition metal dichalcogenide monolayers
11:50 – 12:10 PM	Barnabas Kim, *TAMU*	BEC Entropy Enigma
12:10 – 12:40 PM	Guoqin Ge *Huazhong University of Science & Technology*	Refraction angle rotation under quantum control in a rotary media
12:40 PM	LUNCH	Tobin Cafeteria (bottom floor UU Bldg.)

Friday evening, July 27, 2018

5:30 – 6:30 PM: Dinner, Tobin Cafeteria (bottom floor UU Bldg.)

8:00 PM: Snack food is being delivered to the Residence Hall kitchen (3rd floor)

Saturday morning, July 28, 2018

5:30 AM Breakfast is set in the Residence Hall kitchen (3rd floor)

Posters:

1. Aysan Bahari, TAMU, *Synthesis and Analysis of Ultrafast Waveforms using Coherent Raman Sidebands*
2. Shahriar Esmaeili, TAMU, *Hidden PT symmetry and quantization of a coupled-oscillator model of QASER*
3. Barnabas Kim, TAMU, *Entropy Production in a simple Quantum System*
4. Brian Ko, Baylor/TAMU, *Degenerate Four-Wave Mixing near the Excitonic Resonances of Bulk MoS_2*
5. Rongxin Chen, TAMU, *Reservoir-engineered optomechanical entanglement via optimizing effective optomechanical couplings and cavity-driving detuning*
6. Ming Che Lee, TAMU, *Tip-enhanced photoluminescence of NV center in nanodiamond*
7. Fu Li, TAMU, *Stimulated Raman Spectroscopies for the Chiral Molecules*
8. Zachary Liege, Baylor University, *Plasma Characterization for Raman Backscatter Pulse Compression*
9. Khant Minn, Baylor University, *Nano-antenna on Photonic Crystal Fiber*
10. Navid Rajil, TAMU, *Accumulative Effects in fs-laser optical breakdown of biological tissues*
11. Rob Scully & Virgil Sanders, TAMU, *A new mobile lab will have multiple uses*
12. Anton Shutov, TAMU, *Enhancement of Coherent Anti-Stokes Raman Scattering by MoS_2 Nanoparticles*
13. Mariia Shutova, TAMU, *Optimization of Coherent Raman Generation via Adaptive Optics*
14. Charles Wallace, TAMU, *The Fine Structure Constant and the Optical Properties of Graphene*
15. Luojia Wang, Tongji University, *Spontaneous decay process of two-level atoms near plasmonic structures*
16. Zhedong Zhang, TAMU, *Two-dimensional spectroscopy for vibrational polaritons*
17. Xingchen Zhao, TAMU, *Turbid Media Imaging via Cross-spectrum*

Video talk: Dudley Herschbach, *Harvard*, Dimensional scaling analysis of atoms

Summer School is organized by Narangerel Altangerel, Bob Brick, Kimberly Chapin, Barnabas Kim, Ren-Bao Liu, Virgil Sanders, Marlan Scully, Rob Scully, Anatoly Svidzinsky, Da-Wei Wang, Zhenhuan Yi