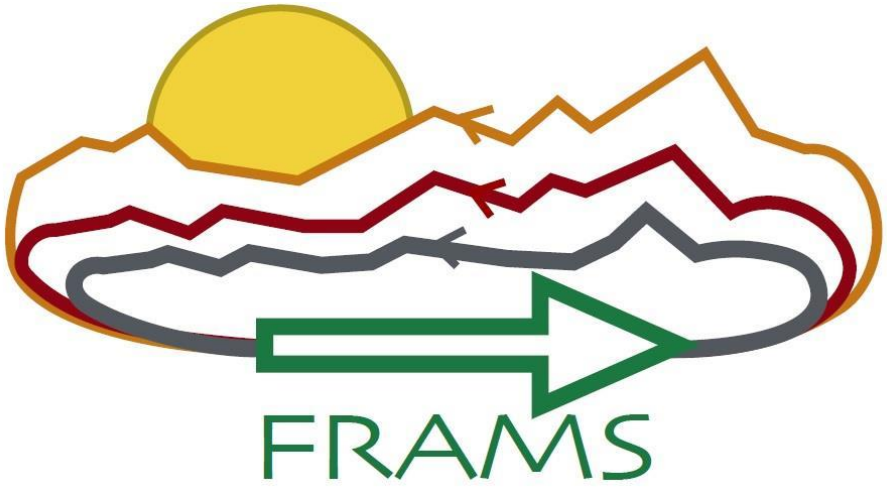
7th Front Range Advanced Magnetics Symposium (FRAMS)

September 18-19, 2021

Lory Student Center (LSC), Colorado State University



Colorado State University

NIST

University of Colorado Boulder

University of Wyoming

UCCS University of Colorado Colorado Springs

University of Denver

Colorado School of Mines
EARTH • ENERGY • ENVIRONMENT

Organizers

- Ard, Christopher – Poster Session Chair
- Bozhko, Dmytro – Finance Chair
- Celinski, Zbigniew
- Chen, Hua – General Chair
- Goldfarb, Ron
- Kalappattil, Vijaysankar – Student Events Chair
- Liu, Chuanpu – Exhibits Chair
- Winblad, Aidan – Publicity Chair
- Wu, Mingzhong
- Zadrozny, Joe – Poster Awards Chair

Website

magnetics.colostate.edu/frams/

Zoom webinar link

zoom.us/j/98831072193

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OXFORD INSTRUMENTS

Quantum Design

TABOR ELECTRONICS

Saturday, September 18, 2021

08:00 AM - 09:00 AM	Breakfast (**All events will be in LSC Theatre unless noted otherwise**)
09:00 AM - 09:10 AM	Opening Remarks, Hua Chen
09:10 AM - 10:30 AM	Morning Session 1, Chair: Ron Goldfarb (NIST)
09:10 AM	**Kathrin Spendier** (UCCS) Use of Magnetic Nanoparticles as In Situ Mucus Property Probe
09:30 AM	**Dmytro Bozhko** (UCCS) Transport of Magneto-Elastic Bosons in Yttrium Iron Garnet Films
09:50 AM	**Ted Monchesky** (Dalhousie University) (Virtual) Magnetic Properties of Ni_2In-type Mn-X-Ge Films, with X = {Co, Rh, Ir}
10:10 AM	**Satoru Emori** (Virginia Tech) (Virtual) Damping in Iron Thin Films: Recent Experimental Insights
10:30 AM - 10:50 AM	Coffee Break
10:50 AM - 11:00 AM	Sponsor Talk 1 (Form Factor)
11:00 AM - 12:00 PM	Morning Session 2, Chair: Vijay Kalappattil (CSU)
11:00 AM	**Vincent Harris** (Northeastern University) (Virtual) Interface-Engineered Barium Magnetoplumbite – Wide-bandgap Semiconductor Integration Enabling System-on-Wafer Solutions
11:20 AM	**Can-Ming Hu** (University of Manitoba) (Virtual) Old Men and the Sea of Cavity Magnonics
11:40 AM	**Oleksander Mosendz** (Western Digital) (Virtual) Physics and Applications of Novel Non-Volatile Random Access Memories
12:00 PM - 12:10 PM	Group Photo
12:10 PM - 01:10 PM	Lunch, **LSC Ballroom-350D**; Students "Lunch with Experts", **LSC 322**
01:10 PM - 02:10 PM	Social Event, Chair: Mingzhong Wu (CSU)
02:10 PM - 02:20 PM	Sponsor Talk 2 (Tabor Electronics)
02:20 PM - 04:00 PM	Afternoon Session, Chair: Aidan Winblad (CSU)
02:20 PM	**Robert Camley** (UCCS) Nonreciprocity in Millimeter Wave Devices using a Magnetic Grating Metamaterial
02:40 PM	**Barry Zink** (DU) Magnetization and Antiferromagnetic Coupling of the Interface between a 20 nm YIG Film and a GGG Substrate
03:00 PM	**TeYu Chien** (UWyo) Magnetic Van der Waals Materials Studied with Scanning Tunneling Microscopy and Spectroscopy
03:20 PM	**Joseph DiVerdi** (CSU) Molecular Dynamics by Solid-State NMR: Water in Nanoconfinement within Solid Alkane Reverse Micelles (SARMs)
03:40 PM	**Brandon Rugg** (NREL) (Virtual) Dynamics of Spin-Correlated Triplet Exciton Pairs in Ordered Molecular Crystals
04:00 - 06:00 PM	Poster Session, **LSC Theatre Balcony**, Chair: Christopher Ard (CSU)
06:00 - 08:30 PM	Dinner and Plenary Session, **LSC Ballroom-350D**, Chair: Hua Chen (CSU) **Axel Hoffmann** (UIUC): Hybrid Magnon Modes **Justin Shaw** (NIST): Quantifying Spin-Mixed States in Ferromagnets

Sunday, September 19, 2021

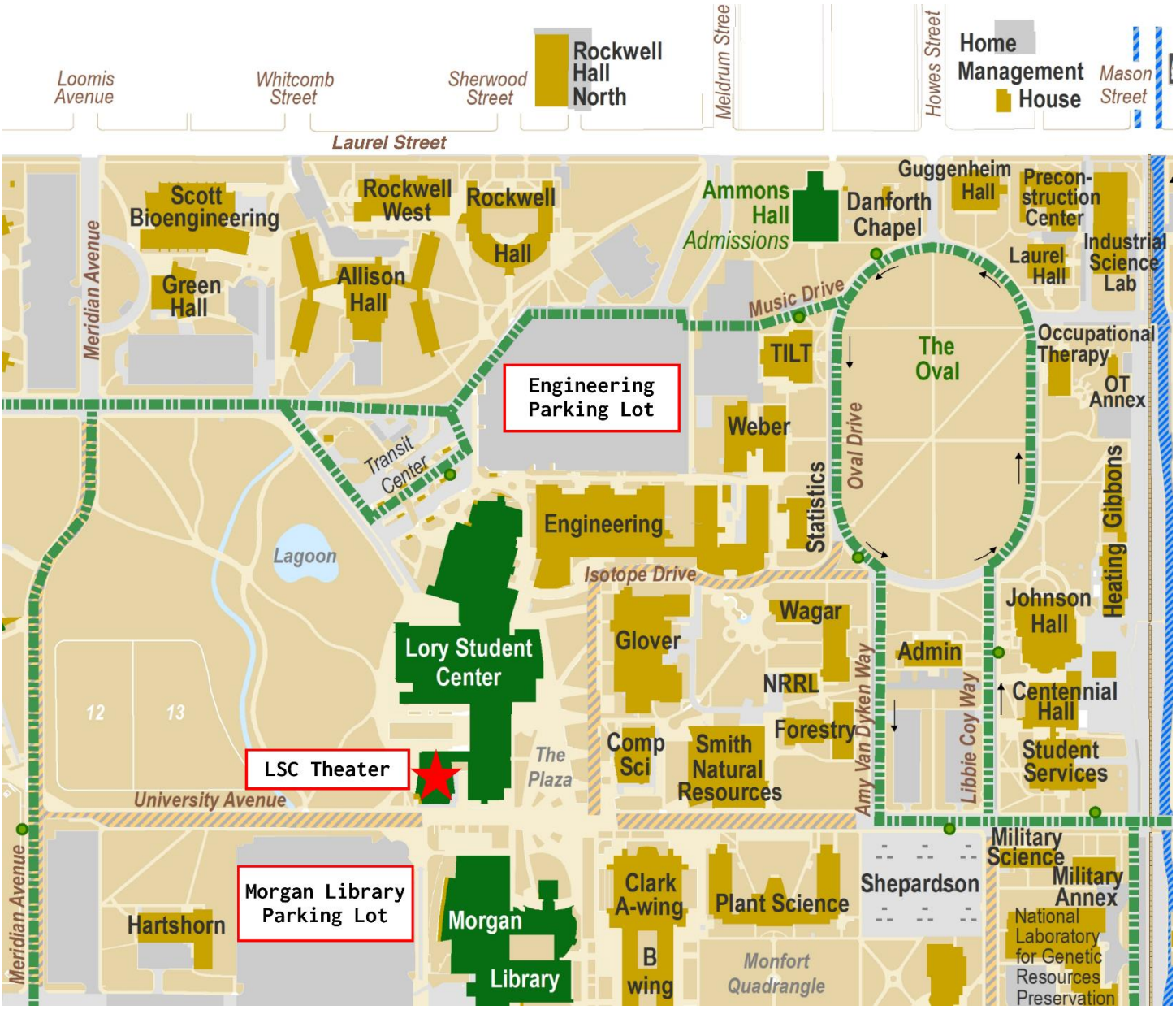
08:00 AM - 09:00 AM	Breakfast
09:00 AM - 09:10 AM	Sponsor Talk 3 (Quantum Design)
09:10 AM - 10:30 AM	Morning Session 1, Chair: Dmytro Bozhko (UCCS)
09:10 AM	**Mikhail Kostylev** (University of Western Australia) (Virtual)
	Magnonic Reservoir Computing
09:30 AM	**Georg Woltersdorf** (Matin-Luther-University Halle-Wittenberg) (Virtual)
	Nonlinear Spin Waves and Frequency Combs at Low Bias Fields in NiFe
09:50 AM	**Wayne Saslow** (Texas A&M) (Virtual)
	How do Magnetization M and Spin Accumulation m differ?
10:10 AM	**Ezio Iacocca** (UCCS)
	Optically-Induced Nonlinear Magnetization Dynamics
10:30 AM - 10:50 AM	Coffee Break
10:50 AM - 11:00 AM	Sponsor Talk 4 (Oxford Instruments)
11:00 AM - 12:00 PM	Morning Session 2, Chair: Chuanpu Liu (CSU)
11:00 AM	**Anthony Arrott** (Simon Fraser University) (Virtual)
	Critical Slowing Down Follows the Inverse of Time
11:20 AM	**Erol Girt** (Simon Fraser University) (Virtual)
	Control of the Noncollinear Interlayer Exchange Coupling
11:40 AM	**Paul Omelchenko** (Simon Fraser University) (Virtual)
	Asymmetric Transport of Pure-Spin-Currents across Pt/Au
12:00 - 01:00 PM	Lunch, **LSC Ballroom-North**
01:00 - 02:30 PM	Social Event, Chair: Zbigniew Celinski
	Bret Heinrich (Simon Fraser University)
	My Life in Magnetism; Experiences in Last 60 Years
02:30 PM - 03:30 PM	Afternoon Session 1, Chair: Joe Zadrozny (CSU)
02:30 PM	**Stephen Russek** (NIST)
	Table-top microMRI using Spintronic Hyperpolarization
02:50 PM	**Kristen Buchanan** (CSU)
	Up-conversion of Spin Wave Modes in Y-shaped Permalloy Structures
03:10 PM	**Zbigniew Celinski** (UCCS)
	Measurement of Sub-Zero Temperatures in Magnetic Resonance Imaging
03:30 PM - 05:30 PM	Poster Session, **LSC Theatre Balcony**, Chair: Christopher Ard (CSU)
05:30 PM - 06:10 PM	Afternoon Session 2, Chair: Hua Chen (CSU)
05:30 PM	**Chen-Ting Liao** (CU Boulder)
	Direct Observation of Emergent Magnetic Monopoles from 3D Topological Spin Textures using Soft X-ray Vector Ptychography
05:50 PM	**Christopher Pocs** (CU Boulder)
	High-Field Resonant Torsion Magnetometry: Probing Anisotropic Exchange and CEF Physics in 4*f* Magnets
06:10 PM - 06:20 PM	Award Session and Closing Remarks

Saturday Poster Session

Name	Poster #	Poster Title
Laith Alahmed (Auburn)	1	Magnetism and Spin Dynamics in Room-Temperature van der Waals Magnet Fe_5GeTe_2 (Virtual)
Jeffrey Brock (UCSD)	2	Domain morphology phase transitions and skyrmion stabilization in thin ferromagnet/heavy metal heterostructures with low exchange stiffness
ZhuangEn Fu (UWyo)	3	Current-driven Magnetic Domain Switching in Few-layer CrI_3
River Gassen (UCCS)	4	Non-Linear Behavior of Magnetic Particle Clusters Influenced by an Oscillating Magnetic Field
Brooke Livesay (CSU)	5	Iron(II) Spin State Switching Through First Coordination Changes
John Ringler (CSU)	6	Single-ion properties of the transverse-field Ising model material $CoNb_2O_6$
Vijay Sankar Kalappattil (CSU)	8	Large Magneto-Electric Resistance in the Topological Dirac Semimetal alpha-Sn
Kevin Plocher (CSU)	9	Sputtering Growth of High-Quality CoTb Thin Films with Strong Perpendicular Magnetic Anisotropy
Sara Goldman (UCCS)	10	Optimization of magnetic properties of individual NiFe layers for use in inductors operating at radio and low GHz frequencies
Fred Anderson (CSU)	11	Influence of Geometric Distortions on Electronic Structure of Three Cr(III) Cyclam Complexes
Nirjhar Bhattacharjee (Northeastern)	13	Antiferromagnetic Phase in Sputtered Topological Insulator/Ferromagnetic Heterostructure Interface (Virtual)
Iona Binnie (CU Boulder)	14	Probing Nanomagnetic Textures using Extreme-Ultraviolet Resonant Magnetic Scattering
Kirsten Blagg (Mines)	15	Thermoelectric Effects in Superconductor-Ferromagnetic Hybrids
Sam Bleser (DU)	16	Negative spin Hall angle and large spin-charge conversion in thermally-evaporated chromium thin films
Anthony Campanella (CSU)	17	Synthetic Control of Magnetic Resonance Properties Towards New Bio-Imaging Techniques
Artek Chalifour (UCCS)	18	Inclusion of Field Dependent Magnetic Relaxation Time In Zero-Field-Cooled Magnetization Models Prov
Matt Copus (UCCS)	19	Nonlinear generation of half-frequency spin waves in ferromagnets with a flower state
Paul Couture (UCCS)	20	Dynamic Demagnetizing Tensors and Composite Based Electromagnetic Interference Shielding Materials
Amanda Gin (CSU)	21	Ligand influence on EPR properties of Gd(III) cryptand complexes
Ryan Greening (DU)	22	Observation of self-spin-orbit torque from ferromagnetic metals

Sunday Poster Session

Name	Poster #	Poster Title
Yu Hao (UCCS)	23	Local dipolar magnetic fields of self-assembled ferrite nanoparticles
Leopoldo Hernandez (DU)	24	Temperature Controlled Anomalous Hall Voltage Switching in Co/Gd Ferrimagnet Near Compensation
Hyejin Jeong (CSU)	25	Analysis of Antiviral Covid-19 Drug Candidates Using Signal Amplification by Reversible Exchange
Chuanpu Liu (CSU)	26	Magnetization switching by Spin-Orbit Torque from a Topological Dirac Semimetal
David Marchfield (CSU)	27	Microstructural Model of Magnetorheological Elastomers (Virtual)
Roxanna Martinez (CSU)	28	A Synthetic Approach at Understanding Spin Dynamics
Kaitlin McAllister (UCCS)	29	Near-field microwave scanning microscope for magnonics applications
Sein Min (Seoul Woman's University)	30	The SABRE for the polarization of Bis[2-pyridyl(alkyl)]amine
Ian Moseley (CSU)	31	Chemical Control of Magnetic Relaxation Using Open-Shell Diluents
Matthew Natale (DU)	32	Non-Electric Contribution to Thermal Conductivity in an Ultra-Low Gilbert Damping Ferromagnetic Alloy Thin Film
Katie Nygren (CSU)	33	Vanadium Tetracyanoethylene (VTCNE) Device Characterization using Brillouin Light Scattering (BLS)
Tyler Ozvat (CSU)	34	Realizing thermometric control of cobalt-59 spin-based probes via ligand design
Renju Peroor (UCCS)	35	Heralded parametric single magnon source
Tim Read (UCCS)	36	Comparison of images obtained at high and low magnetic fields for Magnetic Resonance Imaging Thermometry
Plumi Samarawickrama (UWyo)	37	Layer dependent superconductivity in 2M-WS2 nanolayers
Willian Scougale (UWyo)	38	Scanning Tunneling Microscopy and Spectroscopy Investigations of Iron Substitution Doping of Tungsten Ditelluride
Narendra Shrestha (UWyo)	39	Magnetoresistance in Helical Antiferromagnet Eu metal thin films
Joshua Stoll (UCCS)	40	A diffusion-limited system for studying nanoparticle effects on 1H nuclear relaxation
Alexandra Stuart (CSU)	41	Micromagnetic simulations of the spin memory effect in antiferromagnetically-coupled skyrmion pairs
Okten Ungor (CSU)	42	The Effect of Electron Spin-Conversion Processes on 59Co Nuclei- Spin Properties
Connor Wood (UCCS)	44	Theory of Nonlinear Resonance Absorption in two AF Coupled Magnetic films



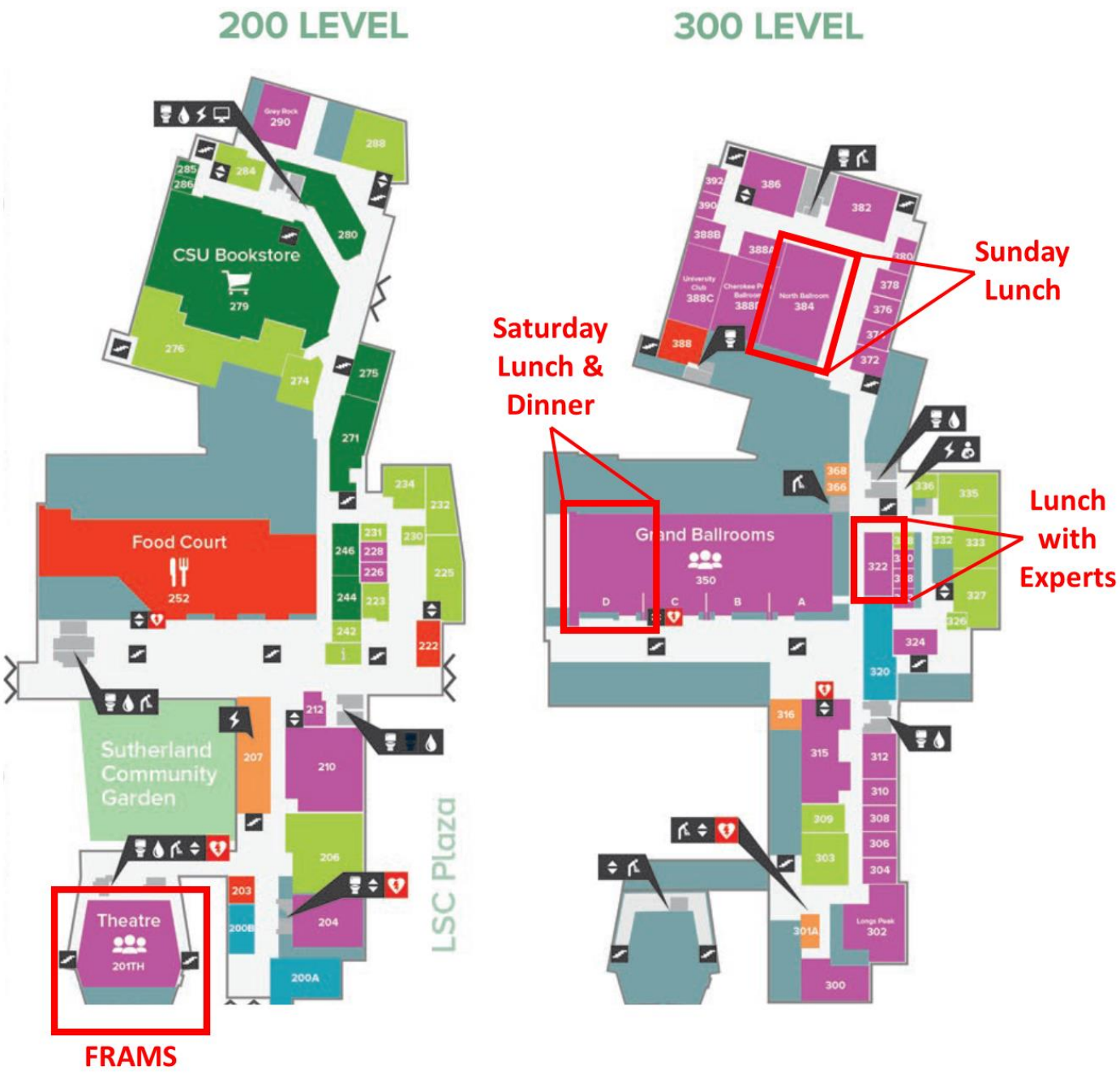
How to get to the Lory Student Center (LSC) Theatre

Driving:

- Parking at CSU during the weekend is free. We recommend parking in either the Engineering Parking Lot or the Morgan Library Parking Lot.
- To get to the Engineering Parking Lot: Turn South at the intersection of Laurel and Meldrum.
- To get to the Morgan Library Parking Lot: Head East at the intersection of Shields and Pitkin, turn North onto Meridian Ave, and finally turn East onto Hughes Way.

Walking:

- If you are staying at Best Western, you can cross over College Ave, follow the pathway Southwest, which will connect to University Ave, then proceed West until you reach the LSC.
- If you are staying at Hilton, you can walk North on Centre Ave, which will turn into a campus pathway, continue North until you reach the LSC.
- LSC Theatre is in the south end of the LSC building.



WiFi Access:

Look for csu-guest in your WiFi settings. This is an unsecured and open network for guest access only. You will need to accept the Campus Acceptable Usage Policy to use this network.

CSU COVID-19 Policy for Visitors:

- Visitors are required to wear a mask while indoors.
- If a visitor is exposed or tests positive, they are required to report through the COVID Reporter (https://covid.colostate.edu/reporter/).
- Visitors are not required to disclose their vaccine status.
- Visitors are not required to screen.