

At-A-Glance

2017 SIAM Conference on Applications of Dynamical Systems

Figure courtesy J. Meiss and D. Simpson, DSWeb media gallery.



May 21-25, 2017
Snowbird Ski and Summer Resort
Snowbird, Utah, USA

SIAM 2017 Events Mobile App

Scan the QR code with any QR reader and download the TripBuilder EventMobile™ app to your iPhone, iPad, iTouch or Android mobile device. You can also visit www.tripbuildermedia.com/apps/siamevents



siam

Society for Industrial and Applied Mathematics
3600 Market Street, 6th Floor
Philadelphia, PA 19104-2688 USA
Telephone: +1-215-382-9800 Fax: +1-215-386-7999
Conference E-mail: meetings@siam.org
Conference Web: www.siam.org/meetings/
Membership and Customer Service:
(800) 447-7426 (US & Canada) or +1-215-382-9800 (worldwide)
www.siam.org/meetings/ds17

2017 SIAM Conference on Applications of Dynamical Systems

Saturday, May 20

Sunday, May 21

Sunday, May 21

4:00 PM - 8:00 PM

Registration
Ballroom Foyer

5:00 PM - 6:00 PM

Student Icebreaker
Primrose A

6:00 PM - 8:00 PM

Welcome Reception
Ballroom



Sunday, May 21

7:15 AM - 4:15 PM

Registration
Ballroom Foyer

8:15 AM - 10:15 AM

Concurrent Sessions

MT1 Rigorous Numerics in Dynamics
Ballroom 1

MS1 Isochrons and Isostables
Ballroom 2

MS2 Data-driven Approaches for Distinguishing Direct from Indirect Interactions in Networks
Ballroom 3

MS3 Network Topology and Dynamics in Complex Systems: Modeling and Data Analysis - Part I of II
Primrose A

MS4 Aperiodic Order and Quasicrystals in Nonlinear Pattern Formation
Primrose B

MS5 State and Parameter Estimation in Models of Cellular Electrical Activity
Maybird

MS6 Random Dynamics in Microbiology
Magpie B

MS7 Nonlinear Dynamics of Mechanical Metamaterials - Part I of II
Wasatch B

MS8 Set Oriented and Transfer Operator Methods for Turbulent Flows - Part I of II
Superior B

MS9 Delay Models of Machining Processes
Superior A

MS10 Dynamical Systems at the Interfaces of Biology and Medicine
Wasatch A

MS11 Modeling of Intracellular Transport and Cell Organization - Part I of II
Magpie A

MS12 Optimal Control Design for Complex Systems
White Pine

10:15 AM - 10:45 AM

Coffee Break
Golden Cliff



10:45 AM - 11:00 AM

Welcome Remarks
Ballroom

11:00 AM - 11:45 AM

IP1 Some Geometrical and Physical Aspects of Morphogenesis
L. Mahadevan, Harvard University, USA
Ballroom

11:45 AM - 1:15 PM

Lunch Break
Attendees on their own

1:15 PM - 3:15 PM

Concurrent Sessions

MT2 Data Assimilation
Ballroom 2

MS13 Computer Assisted Proofs in Dynamical Systems - Part I of II
Ballroom 1

MS14 Astrocyte Calcium Dynamics and Astro-neural Interactions
Ballroom 3

MS15 Network Topology and Dynamics in Complex Systems: Modeling and Data Analysis - Part II of II
Primrose A

MS16 Large Deviations in Stochastic Populations with Spatial Structure
Primrose B

MS17 Chaotic Communications and Radar - Part I of II
Maybird

MS18 Excitability, Feedback and Collective Decision-Making Dynamics
Magpie B

MS19 Nonlinear Dynamics of Mechanical Metamaterials - Part II of II
Wasatch B

MS20 Set Oriented and Transfer Operator Methods for Turbulent Flows - Part II of II
Superior B

MS21 Analytical and Numerical Advances in Multilayer and Multiplex Networks: Structure and Dynamics
Superior A

MS22 Mathematical Pharmacology
Wasatch A

MS23 Modeling of Intracellular Transport and Cell Organization - Part II of II
Magpie A

MS24 Optimization Methods in Dynamical Systems
White Pine

3:15 PM - 3:45 PM

Coffee Break
Golden Cliff



3:45 PM - 5:45 PM

Concurrent Sessions

MS25 Computer Assisted Proofs in Dynamical Systems - Part II of II
Ballroom 1

MS26 Recent Developments in Data Assimilation - Part I of II
Ballroom 2

MS27 The Dynamics and Function of Neuronal Networks - Part I of II
Ballroom 3

MS28 Dynamics of Oscillator Populations: Patterns and Dynamics on the Way to Synchrony
Primrose A

MS29 Stochastic Dynamics
Primrose B

MS30 Chaotic Communications and Radar - Part II of II
Maybird

MS31 Modal Decomposition of Networks and Structured Mechanical Systems
Magpie B

MS32 Global Bifurcations and their Applications - Part I of II
Wasatch B

MS33 Initiation and Suppression of Excitation Waves
Superior B

MS34 Dynamics of Small Neuromorphic Networks (Biological and Biomimetic)
Superior A

MS35 Gene Regulatory Networks and Synthetic Biology
Wasatch A

MS36 Exotic Bifurcations in Fluid and Granular Dynamics - Part I of II
Magpie A

MS37 Energy Transport and Control in Nonlinear Systems - Part I of II
White Pine

5:45 PM - 6:00 PM

Intermission

Sunday, May 21

Monday, May 22

Monday, May 22

6:00 PM - 6:15 PM

Prize Presentations -
Juergen Moser and J. D. Crawford
Ballroom



6:15 PM - 7:00 PM

SP1 Juergen Moser Lecture - Emergent Behavior in Large Systems of Many Coupled Oscillators
Edward Ott, University of Maryland, USA
Ballroom

Monday, May 22

8:00 AM - 6:15 PM

Registration
Ballroom Foyer

8:30 AM - 10:30 AM

Concurrent Sessions

MS38 Noise-Induced Transitions in Networks
Ballroom 1

MS39 Recent Developments in Data Assimilation - Part II of II
Ballroom 2

MS40 The Dynamics and Function of Neuronal Networks - Part II of II
Ballroom 3

MS41 Using Reservoir Computers to Learn Dynamical Systems
Primrose A

MS42 Nonlinear Aspects of Dynamical Systems Driven by Coulomb Interactions - Part I of II
Primrose B

MS43 Multiscale Dynamics: Data-driven Characterization, Modeling, and Control - Part I of II
Maybird

MS44 Topographic Influences on Vegetation Patterns in Semi-arid Regions
Magpie B

MS45 Global Bifurcations and their Applications - Part II of II
Wasatch B

MS46 Non-linear Dynamics in Endocrine Systems
Superior B

MS47 Dynamical Systems Techniques in Navier-Stokes Flow Without Material Boundaries - Part I of II
Superior A

MS48 Dynamical Models of Plant Response to Threats
Wasatch A

MS49 Exotic Bifurcations in Fluid and Granular Dynamics - Part II of II
Magpie A

MS50 Energy Transport and Control in Nonlinear Systems - Part II of II
White Pine

10:30 AM - 11:00 AM

Coffee Break
Golden Cliff



11:00 AM - 11:45 AM

IP2 Pattern Formation in the Drylands: Vegetation Patterns in Mathematical Models and in Satellite Images of the Horn of Africa
Mary Silber, University of Chicago, USA
Ballroom

11:45 AM - 1:15 PM

Lunch Break
Attendees on their own

12:00 PM - 1:00 PM

Mentoring Program
Primrose A

1:15 PM - 3:15 PM

Concurrent Sessions

MS51 Novel Applications of Discrete Maps in Neuroscience
Ballroom 1

MS52 Stochastic Analysis with Applications in Biology and Evolutionary Dynamics - Part I of II
Ballroom 2

MS53 Dynamics of Systems with Frictional Contact - Towards Spatially Extended Systems - Part I of II
Ballroom 3

MS54 Waves, Scales, and Balances in Geophysical Fluid Flow - Part I of II
Primrose A

MS55 Nonlinear Aspects of Dynamical Systems Driven by Coulomb Interactions - Part II of II
Primrose B

MS56 Multiscale Dynamics: Data-driven Characterization, Modeling, and Control - Part II of II
Maybird

MS57 Observing and Controlling Complex Networks
Magpie B

MS58 Waves and Patterns
Wasatch A

MS59 Dynamical Systems with Large Transients
Superior B

MS60 Dynamical Systems Techniques in Navier-Stokes Flow without Material Boundaries - Part II of II
Superior A

MS61 Challenges and Opportunities of Equation-free Modeling for Biological Systems
Wasatch A

MS62 Dynamics of Coupled Networks and their Applications
Magpie A

MS63 Recent Advances in Stochastic Analysis on Non-equilibrium Systems
White Pine

3:15 PM - 3:45 PM

Coffee Break
Golden Cliff



3:45 PM - 5:45 PM

Concurrent Sessions

MS64 Emerging Models of Resilience
Ballroom 1

MS65 Stochastic Analysis with Applications in Biology and Evolutionary Dynamics - Part II of II
Ballroom 2

MS66 Dynamics of Systems with Frictional Contact - Towards Spatially Extended Systems - Part II of II
Ballroom 3

MS67 Waves, Scales, and Balances in Geophysical Fluid Flow - Part II of II
Primrose A

MS68 Recent Advances in Slow-Fast Dynamics - Part I of II
Primrose B

MS69 Advances in Infectious Disease Modeling - Part I of II
Maybird

MS70 Conceptual and Predictive Models in Ecology
Magpie B

MS71 Nonsmooth Dynamics: Applications and Novel Insights
Wasatch B

MS72 Theory and Applications of Delay Differential Equations - Part I of II
Superior B

MS73 Mathematical Analysis of Classical and Asynchronous Network Dynamical Systems - Part I of II
Superior A

2017 SIAM Conference on Applications of Dynamical Systems

Monday, May 22

MS74 Recent Developments in Continuum Models for Nonlinear Optics and Nonequilibrium Gas Dynamics
Wasatch A

MS75 Explosive Transitions in the Structure and in the Dynamics of Complex Networks
Magpie A

MS76 Data-driven Analysis and Modeling of Real-world Dynamical Systems
White Pine

5:45 PM - 6:00 PM

Intermission

6:00 PM - 6:45 PM

IP3 Random Long Time Dynamics for Large Systems of Interacting Oscillators
Giambattista Giacomini, Université Paris VII - Denis Diderot, France
Ballroom

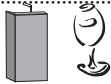
6:45 PM - 7:00 PM

Intermission

7:00 PM - 8:00 PM

SIAG/DS Business Meeting
Ballroom

Complimentary beer and wine will be served.



Tuesday, May 23

8:00 AM - 4:15 PM

Registration
Ballroom Foyer

8:30 AM - 10:30 AM

Concurrent Sessions

MS77 Computes Shoots and Leaves: Alan Turing, Phyllotaxis and Beyond - Part I of II
Ballroom 1

MS78 Topological Data Analysis of Time Series from Dynamical Systems - Part I of II
Ballroom 2

MS79 Koopman Operator Techniques in Dynamical Systems: Theory - Part I of II
Ballroom 3

MS80 Dynamical Systems Approaches to Tipping Points: Theory and Applications - Part I of II
Primrose A

MS81 Recent Advances in Slow-Fast Dynamics - Part II of II
Primrose B

MS82 Advances in Infectious Disease Modeling - Part II of II
Maybird

MS83 Data-based Modeling of Cardiac Dynamics
Magpie B

MS84 Oscillators and Networks with Switching Parameters
Wasatch B

MS85 Theory and Applications of Delay Differential Equations - Part II of II
Superior B

MS86 Mathematical Analysis of Classical and Asynchronous Network Dynamical Systems - Part II of II
Superior A

MS87 Modelling, Dynamics and Coordination of Human Behavior
Wasatch A

MS88 Multiple Time Scales in Biological Systems
Magpie A

MS89 Geometric Mechanics and Applications
White Pine

10:30 AM - 11:00 AM

Coffee Break
Golden Cliff



11:00 AM - 11:45 AM

IP4 Computational Approach Elucidating the Mechanisms of Cardiovascular Diseases
Hiroshi Suito, Tohoku University, Japan
Ballroom

11:45 AM - 1:15 PM

Lunch Break
Attendees on their own

1:15 PM - 3:15 PM

Concurrent Sessions

MS90 Computes Shoots and Leaves: Alan Turing, Phyllotaxis and Beyond - Part II of II
Ballroom 1

MS91 Topological Data Analysis of Time Series from Dynamical Systems - Part II of II
Ballroom 2

MS92 Koopman Operator Techniques in Dynamical Systems: Theory - Part II of II
Ballroom 3

MS93 Dynamical Systems Approaches to Tipping Points: Theory and Applications - Part II of II

Primrose A

MS94 Recent Advances in Characterization of Nonautonomous Dynamical Transport - Part I of II

Primrose B

MS95 Extreme Events: Generation, Prediction, and Tipping
Maybird

CP1

Magpie B

CP2

Wasatch B

CP3

Superior B

CP4

Superior A

CP5

Wasatch A

CP6

Magpie A

CP7

White Pine

3:15 PM - 3:45 PM

Coffee Break
Golden Cliff



3:45 PM - 5:45 PM

Concurrent Sessions

MS96 Spatiotemporally Complex Patterns
Ballroom 1

MS97 Rare Extreme Phenomena in Dynamical Systems - Part I of II
Ballroom 2

MS98 Computational Psychiatry: Mechanisms, Diagnosis, and Treatment of Depressive Disorders
Ballroom 3

MS99 Complex Oscillations in Multiple-time-scale Problems: Theory and Applications
Primrose A

MS100 Recent Advances in Characterization of Nonautonomous Dynamical Transport - Part II of II
Primrose B

MS101 Applications and Numerical Methods in Nonautonomous Systems
Maybird

MS102 Differential Equations with State-dependent Delay
Magpie B

2017 SIAM Conference on Applications of Dynamical Systems

Tuesday, May 23

MS103 Recent Results on Traveling Waves in Systems of PDEs - Part I of II
Wasatch B

MS104 Dynamical Systems Approaches to Geophysical Extreme Events
Superior B

MS105 Dynamics and Complexity in the Auditory Sensing System - Part I of II
Superior A

MS106 Nonlinear Dynamics in Optics - Part I of II
Wasatch A

MS107 Advanced Data-driven Techniques and Numerical Methods in Koopman Operator Theory - Part I of II
Magpie A

MS108 Vortices in Excitable Media: Theory and Experiment
White Pine

5:45 PM - 8:30 PM

Dinner Break
Attendees on their own

6:30 PM - 8:30 PM

SIADS Editorial Board Meeting
Aerie Restaurant
(Mountain Private Dining Room)

8:30 PM - 10:30 PM

PP1 Poster Session and Dessert Reception
Ballroom

Wednesday, May 24

8:00 AM - 4:15 PM

Registration
Ballroom Foyer

8:30 AM - 10:30 AM

Concurrent Sessions

MS109 The Motion of Interfaces and Free Boundaries in Interdisciplinary Science
Ballroom 1

MS110 Rare Extreme Phenomena in Dynamical Systems - Part II of II
Ballroom 2

MS111 Data-driven Modeling and Prediction of Dynamical Systems - Part I of II
Ballroom 3

MS112 Advances in Stochastic Dynamics and Applications - Part I of II
Primrose A

MS113 Model Reduction and Nonlinear Vibrations in Engineering Applications
Primrose B

Wednesday, May 24

MS114 Nonlocal Behavior in Biological Applications
Maybird

MS115 Multiscale Modeling of Infectious Disease Dynamics: State-of-art and Challenges
Magpie B

MS116 Recent Results on Traveling Waves in Systems of PDEs - Part II of II
Wasatch B

MS117 Atmospheric Dynamics: Clouds, Convection, and Circulation
Superior B

MS118 Dynamics and Complexity in the Auditory Sensing System - Part II of II
Superior A

MS119 Nonlinear Dynamics in Optics - Part II of II
Wasatch A

MS120 Advanced Data-driven Techniques and Numerical Methods in Koopman Operator Theory - Part II of II
Magpie A

MS121 Nonlinear Mechanics and Locomotion
White Pine

10:30 AM - 11:00 AM

Coffee Break
Golden Cliff



11:00 AM - 11:45 AM

IP5 Dynamics, Mixing, and Coherence
Gary Froyland, University of New South Wales, Australia
Ballroom

11:45 AM - 1:15 PM

Lunch Break
Attendees on their own

1:15 PM - 3:15 PM

Concurrent Sessions

MS122 Patterns of Dynamics in Complex Networks
Ballroom 1

MS123 Conceptual Climate Models: Approaches and Techniques - Part I of II
Ballroom 2

MS124 Data-driven Modeling and Prediction of Dynamical Systems - Part II of II
Ballroom 3

MS125 Advances in Stochastic Dynamics and Applications - Part II of II
Primrose A

Wednesday, May 24

MS126 Emergence and Interactions of Spatially Localized Patterns - Part I of II
Primrose B

MS127 Control of Dynamics in Brain Networks
Maybird

CP8
Magpie B

CP9
Wasatch B

CP10
Superior B

CP11
Superior A

CP12
Wasatch A

CP13
Magpie A

CP14
White Pine

3:15 PM - 3:45 PM

Coffee Break
Golden Cliff



3:45 PM - 5:45 PM

Concurrent Sessions

MS128 Recent Developments in Objective Coherent Structure Detection - Part I of II
Ballroom 1

MS129 Conceptual Climate Models: Approaches and Techniques - Part II of II
Ballroom 2

MS130 Simple Systems with Complex Dynamics - Part I of II
Ballroom 3

MS131 Recent Advances in Time-delayed Models of Gene Regulatory Networks
Primrose A

MS132 Emergence and Interactions of Spatially Localized Patterns - Part II of II
Primrose B

MS133 Large Scale Dynamics in Coupled Systems on Networks - Part I of II
Maybird

MS134 Reductions of Coupled Oscillator Networks: A New Tool for Neuroscience
Magpie B

MS135 Causation Inference and Information Flow in Dynamical Systems: Theory and Applications - Part I of II
Wasatch B

MS136 Multiscale Modelling in Health and Disease
Superior B

2017 SIAM Conference on Applications of Dynamical Systems

Wednesday, May 24

MS137 Existence, Stability, and Dynamics of Patterns on Multi-dimensional Domains - Part I of II

Superior A

MS138 Coarse Graining and Dimensionality Reduction for Stochastic Dynamical Systems - Part I of II

Wasatch A

MS139 Recent Advances in Chaos-based and Noise-based Random Number Generation

Magpie A

MS140 New Developments in Attractor Reconstruction

White Pine

.....
5:45 PM - 8:30 PM

Dinner Break

Attendees on their own

.....
6:00 PM - 8:00 PM

DSWeb Editorial Board Meeting

Aerie Restaurant

(Mountain Private Dining Room)

.....
8:30 PM - 10:30 PM

PP2 Poster Session and Dessert Reception

Ballroom

Thursday, May 25

.....
8:00 AM - 4:00 PM

Registration

Ballroom Foyer

.....
8:30 AM - 10:30 AM

Concurrent Sessions

MS141 Recent Developments in Objective Coherent Structure Detection - Part II of II

Ballroom 1

MS142 Symmetry, Asymmetry, and Network Synchronization

Ballroom 2

MS143 Simple Systems with Complex Dynamics - Part II of II

Ballroom 3

MS144 Quantitative Models of Neural Dynamics - Challenges and Limitations

Primrose A

MS145 Pattern Formation in Reaction-diffusion Systems with Heterogeneous Parameters

Primrose B

MS146 Large Scale Dynamics in Coupled Systems on Networks - Part II of II

Maybird

MS147 Dynamics in Microbiology

Magpie B

MS148 Causation Inference and Information Flow in Dynamical Systems: Theory and Applications - Part II of II

Wasatch B

MS149 Delay and Stability of Complex Network Dynamics

Superior B

MS150 Existence, Stability, and Dynamics of Patterns on Multi-dimensional Domains - Part II of II

Superior A

MS151 Coarse Graining and Dimensionality Reduction for Stochastic Dynamical Systems - Part II of II

Wasatch A

MS152 Data Driven Biomedical Dynamics, Modeling and Data Assimilation

Magpie A

MS153 Variational Principles in Mechanics

White Pine

.....
10:30 AM - 11:00 AM

Coffee Break

Golden Cliff



.....
11:00 AM - 11:45 AM

IP6 Stochastic Arnold Diffusion of Deterministic Systems

Vadim Kaloshin, University of Maryland, USA

Ballroom

.....
11:45 AM - 1:15 PM

Lunch Break

Attendees on their own

.....
1:15 PM - 3:15 PM

Concurrent Sessions

MS154 Recent Advances in the Stability of Travelling Waves - Part I of II

Ballroom 1

MS155 Advances in Network Synchronization - Part I of II

Ballroom 2

MS156 Applications of Koopman Operator Theory in Dynamical Systems: from Traffic through Power Grid to Molecular Dynamics - Part I of II

Ballroom 3

MS157 Neuronal Modulation, Robustness and Homeostasis - Part I of II

Primrose A

MS158 Stochastic Processes in Heterogeneous Environments - Part I of II

Primrose B

MS159 Nonlinear Time Series Data Analysis - Part I of II

Maybird

MS160 Mathematical Physiology and Medicine - Part I of II

Magpie B

MS161 Random Walks and Anomalous Transport - Part I of II

Wasatch B

MS162 Distributed Sensing and Prediction of Dynamic and Uncertain Environments - Part I of II

Superior B

MS163 Computational Models of Neuronal Connectivity in the Brain - Part I of II

Superior A

MS164 Control of Cardiac Arrhythmias - Part I of II

Wasatch A

MS165 Connecting Dynamic Models to Data: Estimation, Uncertainty, Related Statistical Methods - Part I of II

Magpie A

MS166 Algebraic and Topological Approaches to the N-Body and N-Vortex Problems - Part I of II

White Pine

.....
3:15 PM - 3:45 PM

Coffee Break

Golden Cliff



.....
3:45 PM - 5:45 PM

Concurrent Sessions

MS167 Recent Advances in the Stability of Travelling Waves - Part II of II

Ballroom 1

MS168 Advances in Network Synchronization - Part II of II

Ballroom 2

Thursday, May 25

MS169 Applications of Koopman Operator Theory in Dynamical Systems: from Traffic through Power Grid to Molecular Dynamics - Part II of II

Ballroom 3

MS170 Neuronal Modulation, Robustness and Homeostasis - Part II of II

Primrose A

MS171 Stochastic Processes in Heterogeneous Environments - Part II of II

Primrose B

MS172 Nonlinear Time Series Data Analysis - Part II of II

Maybird

MS173 Mathematical Physiology and Medicine - Part II of II

Magpie B

MS174 Random Walks and Anomalous Transport - Part II of II

Wasatch B

MS175 Distributed Sensing and Prediction of Dynamic and Uncertain Environments - Part II of II

Superior B

MS176 Computational Models of Neuronal Connectivity in the Brain - Part II of II

Superior A

MS177 Control of Cardiac Arrhythmias - Part II of II

Wasatch A

MS178 Connecting Dynamic Models to Data: Estimation, Uncertainty, Related Statistical Methods - Part II of II

Magpie A

MS179 Algebraic and Topological Approaches to the N-Body and N-Vortex Problems - Part II of II

White Pine

.....
5:45 PM - 6:00 PM

Intermission

.....
6:00 PM - 6:15 PM

Closing Remarks and Red Sock Award

Announcements

Ballroom

.....
6:15 PM - 7:00 PM

IP7 Interactions, Deformations and Bifurcations of Singular Patterns

Arjen Doelman, Leiden University, Netherlands

Ballroom

Key to abbreviations and symbols

CP = Contributed Presentation

IP = Invited Plenary Speaker

SP = Special Lecture

MS = Minisymposium

MT = Minitutorial

 = Business Meeting

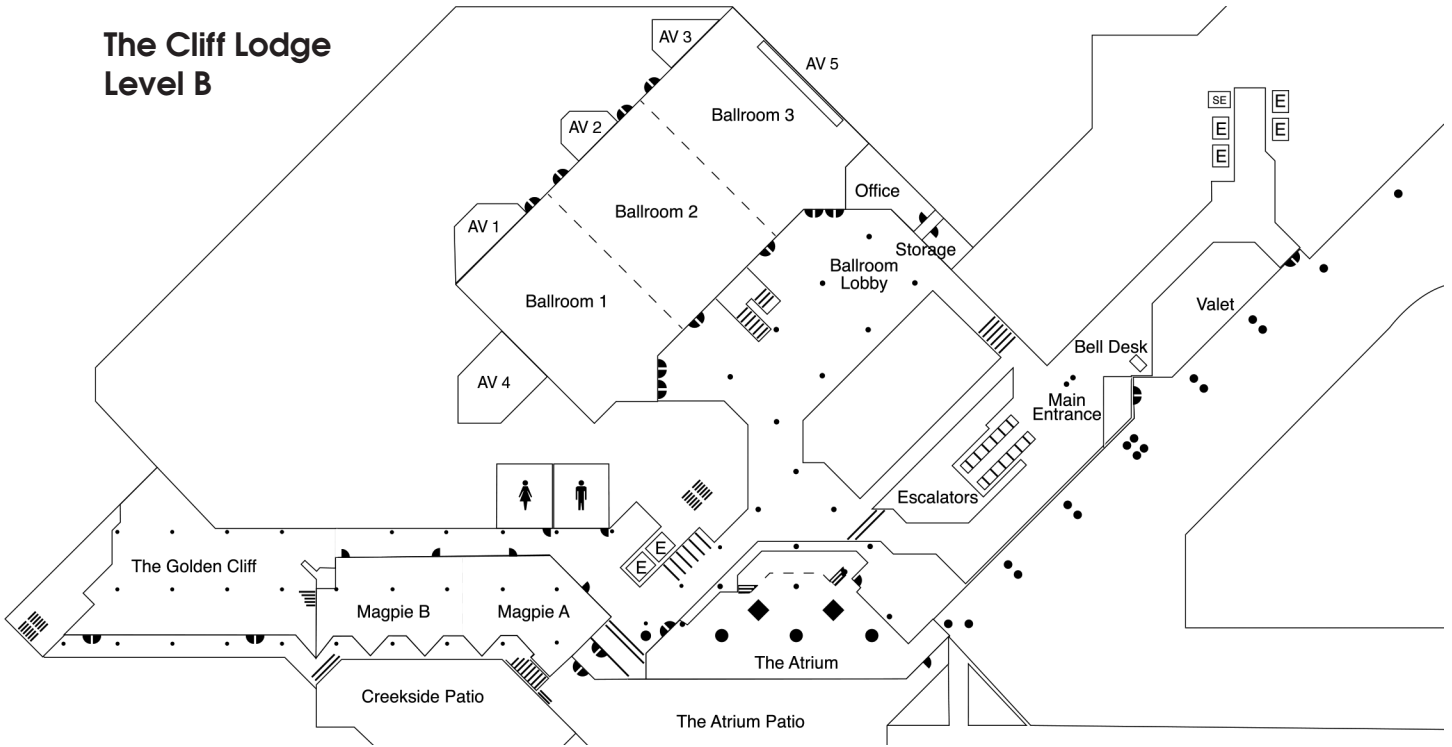
 = Coffee Break

 = Poster Session

 = Refreshments Served

Snowbird Ski and Summer Resort

The Cliff Lodge Level B



The Cliff Lodge Level C

