



Pucón Symposium 2009: Advanced Mathematical Tools for Frontier Astronomy

August 6-9, 2009

During the last two decades, many important new telescope facilities have been installed in Chile, among them Gemini-South and SOAR (AURA/NOAO-USA) and VLT Paranal (ESO). Together with the extensive existing facilities, these have created a unique astronomy infrastructure which has triggered the planning and construction of a wide range of major next-generation optical and radio astronomy facilities. Prominent among these latest projects are the ALMA Observatory (currently under construction) and the LSST Project, which will bring a new frontier of technology requirements for data flow management. In fact, the sensing, transmission, process, analysis, storage and archiving of tera- and peta-range volumes of data that these new facilities will need require a robust set of interdisciplinary skills and this seems the right moment to develop them.

Within this context, organizing a special topical meeting in southern Chile's lake district, the Pucón Symposium 2009, will offer a unique opportunity to address and discuss many of the relevant technical and business issues behind the emerging "Advanced Mathematical Tools for Frontier Astronomy". Our intention is to bring together people from various engineering, technical and scientific disciplines from different R&D organizations with an established tradition of international collaboration, in a special academic and scenic environment, where we can analyze in depth our current activities and discuss in detail our possible future ones.

We hope that you can accept our invitation to participate in the Pucón Symposium 2009, a workshop conference focused on the advanced mathematical tools as well as the engineering and technological aspects involved in frontier optical and radio astronomy, including ultra-high speed networking, e-science/grids/high performance computing, data storage/processing/ archiving, data imaging, robotic telescopes, data mining, search engines, time series and automatic classification, virtual observatories, remote astronomy and optimal scheduling. The tentative program is indicated below.

Organizing Committee

Christopher Miller, CTIO-AURA, Co-Chair
Eduardo S. Vera, CMM/DIE-DCC, University of Chile, Co-Chair
Jaime San Martin, CMM/DIM, University of Chile
Jose Maza, DAS, University of Chile
Mario Hamuy, DAS, University of Chile
R. Chris Smith, CTIO-AURA
Jeff Kantor, LSST-AURA
Richard Hills, ALMA
Fernando Selman, ESO
Alyssa Goodman, Harvard-Smithsonian CfA
Jeff Schneider, Carnegie Mellon University
Andrew Connolly, University of Washington
Alex Gray, Georgia Tech



- Date:** August 6-9, 2009
- Venue:** Pucón, Región de la Araucanía (9th Region), Chile. (800km south of Santiago with direct flight connections via Temuco)
- Official Hotel:** Villarrica Park Lake Hotel (Camino Villarrica-Pucón, km 13)
Tel: +5645 450 000, Fax: +5645 450 202 E-m: reservas@vplh.cl
- Sponsors:** CMM/fcfm-University of Chile, CONICYT-Chile, AURA Inc., ALMA
- Fees:** CHP 160,000 or USD 300 (includes reception, banquet dinners and tour)
- Information:** Pucón Symposium 2009 Organizing Committee,
c/o Eduardo Vera, Co-Chair Tel: +562 978 4939 Fax: +562 688 9705

<http://www.cmm.uchile.cl/pucon2009>,
E-m: pucon2009@dim.uchile.cl

Final Program

pm-Thursday 6

13:35/14:15/17:40/21:05 estimated arrival times to hotel for flights
LA031/LA253/LA033/LA237 departing from Santiago at 10:45/11:25/14:50/18:15
arriving to Temuco at 12:05/12:45/16:10/19:35

Registration

15:00-19:00 (Conference Hall, 7th Floor)

Welcome Coffee

16:00-16:30 (Conference Hall, 7th Floor)

Opening Remarks

16:30-17:00 Christopher Miller, CTIO-AURA
Eduardo S. Vera, CMM/DIE-DCC-UChile

Introduction of Participants

17:00-18:30 Everyone

Conference Reception

19:00-21:00 at Villarrica Park Lake Hotel (Conference Hall, 7th Floor)



Friday 7

Session 1 Science with Massive and Time-varying Datasets

What science is being done now? What can be done in the future?

- 09:00-09:45 P1a Topic Presentation: Andrew Connolly, Univ. Of Washington
09:45-10:30 P1b Topic Presentation: Alejandro Maass, CMM/DIM, UChile
10:30-11:00 O1 Open Discussion, Chair: Diego García, ESO

Coffee Break

11:00-11:30

Session 2 Next-Generation Search Engines and Time Series Datasets

How do we find what we are looking for?

- 11:30-12:15 P2 Classification thru Conversations with Data: Pavlos Protopapas, Harvard-IIC
12:15-13:00 O2 Open Discussion, Chair: Mauricio Marín, Yahoo Research

Lunch Break

13:00-15:00

Session 3 Anomaly Detection

How do we find (and what do we do) with the “oddballs”?

- 15:00-15:45 P3 Topic Presentation: Jeff Schneider, Carnegie Mellon Univ.
15:45-16:30 O3 Open Discussion, Chair: Christopher Miller, CTIO-AURA

Coffee Break

16:30-17:00

Session 4 Visualizing High Dimensional and Massive Datasets

How do we (or will we) visualize what we find?

- 17:00-17:45 P4 Seamless Astronomy: Alyssa Goodman, Harvard (remote)
17:45-18:30 O4 Open Discussion, Chair: Eduardo S. Vera, CMM/DIE-DCC, UChile

Conference Dinner-1 (Welcome event)

20:00-22:30 at Villarrica Park Lake Hotel (Agua Verdes Restaurant, 5th Floor)



Saturday 8

Session 5 Frontier Statistics and Computational Mathematics for Massive Datasets

What are statistical and computational tools we have now?

What will we need in the future?

09:00-09:45 P5a Topic Presentation: Alexander Gray, Georgia Tech

09:45-10:30 P5b Topic Presentation: Jaime San Martín, CMM-UChile

10:30-11:00 O5 Open Discussion, Chair: Ann H. Tucker, SUNY-SB

Coffee Break

11:00-11:30

Session 6 Network Infrastructure and Large Computational Facilities for Massive Datasets: What technology exists and what is lacking?

11:30-12:00 P6a Topic Presentation: Henry Brandt, IBM

12:00-12:30 P6b Topic Presentation: Hisao Uose, NTT-AT

12:30-13:00 O6 Open Discussion, Chair: Alejandro Jofré, CMM/DIM, UChile

Lunch Break

13:00-15:00

Session 7 ALMA and LSST Requirements and Challenges

How will astronomical research be affected by ALMA and LSST?

15:00-15:30 P7a Topic Presentation: Jorge Ibsen, ALMA

15:30-16:00 P7b Topic Presentation: Tim Axelrod, LSST-U

16:00-16:30 O7 Open Discussion, Chair: R. Chris Smith, CTIO-AURA

Coffee Break

16:30-17:00

Session 8 Final Session

17:00-18:00 Round-table Wrap-up Discussion: TBD

18:00-18:30 Closing Remarks: Christopher Miller, CTIO-AURA

Eduardo S. Vera, CMM/DIE-DCC, UChile

Conference Dinner-2 (Farewell event) 20:00-22:30 at Villarrica Park Lake Hotel (Aguas Verdes Restaurant, 5th Floor)



Sunday 9

Conference Trip

10:30-12:30 Two Bus Trips from Villarrica Park Lake Hotel to Termas Geométricas
12:30-16:00 Termas Geométricas (outdoor hotspings: bring bathing suit!)
16:00-18:00 One Bus Trip from Termas Geométricas to Temuco Airport
One Bus Trip from Termas Geométricas to Villarrica Park Lake Hotel

10:40/17:05/17:35/18:30 departure times from hotel for flights
LA030/LA276/LA254/LA236 departing from Temuco at 12:40/19:05/19:35/20:30
arriving to Santiago at 14:00/20:05/20:55/21:50

Monday 10

Special Topical Discussions

9:00-17:00 For those who want to stay an extra day in Pucón for
additional discussions (free format)

10:40/14:10/18:05 departure times from hotel for flights
LA030/LA032/LA236 departing from Temuco at 12:35/16:10/20:05
arriving to Santiago at 13:55/17:30/21:25

Additional Information (from www.lan.com):

LAN Airlines Flights to and from Temuco (August 2009)

- ➔ Hotel Shuttle service from Temuco Airport to Hotel will be available on Aug 05, 06, 07
- ➔ Hotel Shuttle service from Hotel to Temuco Airport will be available on Aug 07, 08, 09, 10

From Santiago to Temuco (Wed 5, Thu 6 and Fri 7):

Airline	Flight Number	Departure from Santiago	Arrival to Temuco
LA	031	10:45	12:05
LA	253	11:25	12:45
LA	033	14:50	16:10
LA	237	18:15	19:35

From Temuco to Santiago (Fri 7):

Airline	Flight Number	Departure from Temuco	Arrival to Santiago
LA	030	12:35	13:55
LA	032	16:10	17:30
LA	254	19:20	20:40
LA	236	20:05	21:25

From Temuco to Santiago (Sat 8):

Airline	Flight Number	Departure from Temuco	Arrival to Santiago
LA	030	12:35	13:55
LA	226	18:50	20:10
LA	254	19:30	20:50

From Temuco to Santiago (Sun 9):

Airline	Flight Number	Departure from Temuco	Arrival to Santiago
LA	030	12:40	14:00
LA	276	19:05	20:25
LA	254	19:35	20:55
LA	236	20:30	21:50

From Temuco to Santiago (Mon 10):

Airline	Flight Number	Departure from Temuco	Arrival to Santiago
LA	030	12:35	13:55
LA	032	16:10	17:30
LA	236	20:05	21:25



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