

supported by FUIF project I 5943-N

Outline



ARI: Past, Present, Future

Aart Middeldorp

University of Innsbruck



■ universitat ARI final meeting 20–23 February 2024 吉良温泉 金の ない ARI final meeting 20–23 February 2024 古良温泉

1. Past, Present, Future

2. Final Remarks

3. ISR 2024

A.M_

Outline

1. Past, Present, Future

- 2. Final Remarks
- 3. ISR 2024

Austria – Japan joint project about development of infrastructure for software tools that aim to automatically (dis)prove confluence, termination and related properties in variety of rewrite formalisms, in connecton with Confluence Competition (CoCo) and Termination and Complexity Competition (termCOMP)

- To develop infrastructure to support the confluence and termination communities (including tool authors, competition organizers, and general researchers). Starting from the existing infrastructure for CoCo (including the Confluence Problems Database COPS and the community-serving web front end CoCoWeb), we will develop a collection of robust software tools for evaluating confluence, termination and complexity methods and tools.
- Or make tools participating in CoCo more reliable by formalizing techniques in the proof assistant Isabelle/HOL such that more (dis)proofs produced by the tools can be certified, in particular for the commutation and infeasibility categories.
- To develop confluence and induction proving techniques for logically constrained rewrite systems (LCTRSs), a very expressive rewrite formalism in which rules are equipped with logical constraints which are checked by powerful SMT solvers.

A.M_ 3/23

Task A: Infrastructure

- 1 problem format
- ② duplicate checking
- ③ tagging and query interface
- **④** LiveView
- **5** StarExec and CoCoWeb
- (6) equivalence of rewrite systems

Task B: Formalization and Certification

- 1 commutation
- infeasibility
- 3 CPF format
- (4) formalization and certification for TRS/CTRS/GCR categories
- presentation by Dohan on Thursday
- ? certification for AGCP, CO3

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universität ARI final meeting innsbruck	20-23 February 2024	吉良温泉	 1. Past, Present, Future	Task A	5/23	universität	ARI final meeting	20-23 February 2024	吉良温泉	 1. Past, Present, Future	Task B

Task C	: Logically Constrained Rewrite Systems			
1 con	nfluence			
② imp	plementation in CtrL			
3 rew	vriting induction			
LCTRS category for CoCo				
► sem	antics of LCTRSs			

presentation by Takahito on Wednesday

Outline

1. Past, Present, Future

2. Final Remarks

3. ISR 2024

A.M_ 6/23

Outline

slides (beamer and 4-up version) will be made available from

https://ari-informatik.uibk.ac.at/meetings/final

- ? bylaws for termCOMP SC
- ? registrations for ISR 2024

1. Past, Present, Future

2. Final Remarks

3. ISR 2024

Location Lecturers and Courses So	chedule Final	Remarks
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universität innsbruck	ARI final meeting	20-23 February 2024	吉良温泉	 2. Final Remarks	9/23



AM_ 10/23

University Center Obergurg

- ► superb location (at 1940 meters)
- everything under one roof (lecture rooms, guest rooms, dining room, bar, sauna)
- ▶ full board
- reasonably priced
- easily accessible by train (Ötztal Bahnhof) and bus (Obergurgl)
- https://www.uibk.ac.at/uz-obergurgl/

ISR 2024

- three tracks
 - A basic track on term rewriting
 - **B** basic track on lambda-calculus and type theory
 - **C** advanced track
- ▶ slots of 1.5 hours
- ► 5 courses in advanced track with 4 slots each
- August 25 (arrival) September 1 (departure)
- six days (Monday Saturday)
 - five days with courses
 - ▶ full day excursion (rafting, hiking, climbing, trail running, ...)

AM_ 11/23

Outline

1. Past, Present, Future

2. Final Remarks

3. ISR 2024

Location	Lecturers and Courses	Sche
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Lecturers

 Frédéric Blanqui 	Inria	track C
 Ugo Dal Lago 	University of Bologna	track C
 Herman Geuvers 	Radboud University Nijmegen	track B
 Nao Hirokawa 	JAIST	track C
 Cynthia Kop 	Radboud University Nijmegen	track C
 Aart Middeldorp 	University of Innsbruck	track A
 Niels van der Weide 	Radboud University Nijmegen	track B
 Sarah Winkler 	Free University of Bolzano – Bozen	track C

universität innsbruck	ARI final meeting	20-23 February 2024	吉良温泉	 3. ISR 2024	Lecturers and Courses

■ universitat ARI final meeting 20–23 February 2024 吉良温泉 monostruck 3. ISR 2024 Lecturers and Courses _A.M_ 14/23

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Co	Courses in Track C						
•	Randomized Programming and Rewriting	Ugo Dal Lago					
	Interoperability of Proof Systems using Lambdapi	Frédéric Blanqui					
Þ	SAT/SMT Solving and Applications in Rewriting	Sarah Winkler					
	Termination and Complexity in Higher-Order Term Rewriting	Cynthia Kop					

- Termination and Complexity in Higr
- Tools in Rewriting

Ugo Dal Lago
Frédéric Blanqui
Sarah Winkler
Cynthia Kop
Nao Hirokawa

Outline

1. Past, Present, Future

2. Final Remarks

3. ISR 2024

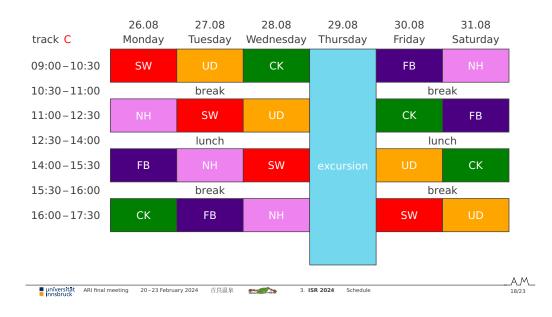
Schedule

A.M 15/23

A.M

13/23







Outline

- **1. Past, Present, Future**
- 2. Final Remarks

3. ISR 2024

Location Lecturers an

Courses Sche

Final Remarks