

# Polygons, buildings and related geometries

Ghent, Belgium, September 19-22, 2022

<https://algebra.ugent.be/pbrg>

*A conference in honor of Hendrik Van Maldeghem's 60th birthday*

Communicated by Joseph A. Thas



This conference was the 28th edition of the **Buildings conference**. The major theme of this edition of the international conference was the deep interaction between algebra and incidence geometry in its various guises – in particular, the focus was on geometric aspects of algebra, and algebraic theories underlying incidence geometries. Because of the interplay with many other fields of mathematics, a wide variety of ideas and methods came together at the meeting. The conference gave the opportunity to research faculty and young researchers in algebra and incidence geometry to learn about the latest developments in the main sub-areas, to explore different visions and directions for future work, and to share their research with other participants.

The conference was initially planned in 2020 in honor of the 60th birthday of Hendrik Van Maldeghem, but due to COVID-19, it was postponed until 2022.



Hendrik

## Scientific committee:

Pierre-Emmanuel Caprace, Bart De Bruyn, Tom De Medts, Dimitri Leemans, Bernhard Mühlherr, Joseph A. Thas, Koen Thas.

## Organizing committee:

Pierre-Emmanuel Caprace, Bart De Bruyn, Yannick De Neyt, Tom De Medts, Jari Desmet, Paulien Jansen, Dimitri Leemans, Bernhard Mühlherr, Daan Rijpert, Joseph A. Thas, Koen Thas.

## Invited speakers:

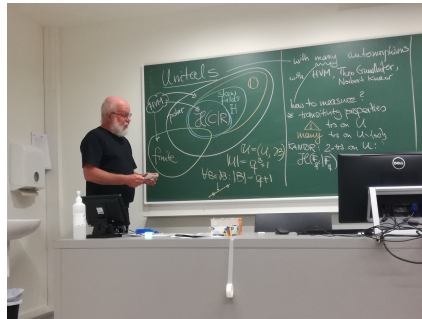
- PETER ABRAMENKO, University of Virginia  
*Finite subgroups of  $SL_n(F[t])$  in characteristic 0*
- BARBARA BAUMEISTER, University of Bielefeld  
*Dual approach to Coxeter and Artin groups:  
the constructions via quasi-Coxeter elements*
- HANS CUYPERS, TU Eindhoven  
*Quasi-Clifford algebras, their Lie and Jordan algebras,  
and quadratic forms over  $\mathbb{F}_2$*
- ANNELEEN DE SCHEPPER, Ghent University  
*Weyl distance preserving maps on spherical buildings*
- LINUS KRAMER, University of Munster  
*An equation for the Riemann curvature tensor,  
strongly regular graphs, and finite fields*
- RAINER LÖWEN, TU of Braunschweig  
*Compact oriented parallelisms of  $PG(3, \mathbb{R})$  arising from  
oriented  $gl$ -stars*
- JAMES PARKINSON, University of Sydney  
*Automorphisms and opposition in spherical buildings*
- BURHARD POLSTER, Monash University  
*Mathematics and YouTube*
- MARKUS STROPPEL, University of Stuttgart  
*Unitals with many automorphisms*
- HENDRIK VAN MALDEGHEM, Ghent University  
*Beautiful subgeometries of beautiful geometries*
- RICHARD WEISS, Tufts University  
*Stable pseudo-geometric modules*

The invited talks were one-hour talks. There were also 9 contributed talks of 30 minutes, given by S. Bischof, D. Chanfi, L. Giuzzi, S. Hughes, T. Marquis, Y. S. Rego, E. Schesler, T. T. Wite, T. Wiedemann.

The organizers strongly encouraged all the speakers to use chalk and the blackboard, and it was a delight to see that the majority of the speakers had followed this suggestion.



Hans Cuypers



Markus Stroppel



There were 60 participants at this conference.

A special evening talk on Monday was given by Burkhard Polster (Monash University) on Mathematics and YouTube, followed by a reception, on which also former PhD students of Hendrik were invited. Hendrik has been (co-) supervisor of 26 PhD students, and several of them were present at the reception. (Hendrik did not know about this in advance, so this was a pleasant birthday surprise for him!)



At the reception.

On Wednesday, we had the Conference Dinner, attended by 60 people. We all enjoyed the dinner very much and the atmosphere was great. The dinner (and all talks on the last day of the conference) were also attended by Francis Buekenhout, one of world's pioneers in incidence geometry. He was the oldest participant of the meeting.



Enjoying Dinner.

The final talk of the conference was given by Hendrik Van Maldeghem himself. First, he spoke one hour on some new beautiful results in Incidence Geometry, based on recent joint work with his PhD student Paulien Jansen. The title was *Beautiful subgeometries of beautiful geometries*. They investigate the geometry of inclusions of Chevalley groups of exceptional type. A lot of beautiful geometry is involved, in particular geometry related to Grassmannians. In the next hour, he spoke about his career, his PhD students, his co-authors, and about Jacques Tits, whose huge influence on incidence geometry cannot be denied.

Hendrik is the author of more than 250 papers. I am proud to have co-authored the most papers (47) with him. Hendrik also mentioned that he was awarded the Euler Medal 2022 by the ICA. He also mentioned several funny anecdotes about things which happened on the many conferences he attended. It was a superb speech given by a superb mathematician.

This conference was a highly successful meeting. Talks were excellent, the level of them was very high, all speakers were very enthusiastic, and the atmosphere was great. Our special thanks also go to the local organizers, in particular Tom De Medts, for the excellent job they did. We all tremendously enjoyed this meeting.

## Sponsors

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For the complete list of abstracts please visit:

<https://algebra.ugent.be/pbrg/images/conference%20booklet.pdf>