



# **AQuA25**

## ***Approximation, Quadrature, and Applications***

Santa Margherita di Pula, Italy  
October 9–11, 2025



Finanziato  
dall'Unione europea  
NextGenerationEU



Ministero  
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The event is organized within the activity of the *PRIN 2022 PNRR AQuAInt - Approximation and Quadrature for Applicative Integral Models*, based on the collaboration of two research units University of Cagliari and University of Basilicata.

The goal of the conference is to share knowledge and last research on the following topics: approximation by linear and nonlinear operators, numerical integration, orthogonal polynomials, integral equations, inverse problem and applications of integral models, and related issues in numerical linear algebra.

## Scientific Committee

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University of Cagliari  
Italy

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University of Basilicata  
Italy

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The conference is organized with the patronage of the University of Cagliari.



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## SOME NEW CLASS OF MULTIPLE ORTHOGONAL POLYNOMIALS

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Multiple orthogonal polynomials are a generalization of orthogonal polynomials in the sense that they satisfy orthogonality conditions with respect to  $r \in \mathbb{N}$  different weight functions simultaneously. Here, we present multiple orthogonal polynomials that satisfy orthogonality conditions with respect to the set of  $r$  bilinear forms defined on the linear space of algebraic polynomials [1], as well as on the linear space of trigonometric polynomials, with special attention to even weight functions. These bilinear forms naturally arise in the construction of sets of anti-Gaussian quadrature rules for the optimal sets of quadrature rules in Borges' sense on the mentioned spaces.

### References

- [1] N. Z. Petrović, M. S. Pranić, M. P. Stanić, T. V. Tomović Mladenović, *The set of anti-Gaussian quadrature rules for the optimal set of quadrature rules in Borges' sense*, J. Comput. Appl. Math., 442 (2024), pp. 115733

| Wednesday, October 8 | Thursday, October 9                            | Friday, October 10                                                  | Saturday, October 11                           |
|----------------------|------------------------------------------------|---------------------------------------------------------------------|------------------------------------------------|
| 8:30–9:00            | Registration                                   |                                                                     |                                                |
| 9:00–9:15            |                                                |                                                                     |                                                |
| 9:15–9:30            | P. Junghanns                                   | L. Reichel                                                          | W. Van Assche                                  |
| 9:30–10:00           |                                                |                                                                     |                                                |
| 10:00–10:30          |                                                |                                                                     |                                                |
| 10:30–11:00          | Chair: Fermo<br>M. Stanić<br>I. Notarangelo    | Chair: Rodriguez<br>S. Serra-Capizzano<br>F. Lipparini              | Chair: Occorsio<br>M. Spalević<br>M. Vikerpuur |
| 11:00–11:30          | Coffee Break                                   | Coffee Break & Photo                                                | Coffee Break                                   |
| 11:30–12:00          |                                                |                                                                     |                                                |
| 12:00–12:30          |                                                |                                                                     |                                                |
| 12:30–13:00          | Chair: Van Assche<br>L. Aceto<br>M.C. De Bonis | Chair: Junghanns<br>F. Nudo<br>V. Loi                               | Chair: Reichel<br>M. Donatelli<br>F. Pes       |
| 13:00–14:00          |                                                |                                                                     |                                                |
| 14:00–15:00          |                                                |                                                                     |                                                |
| 15:00–15:30          |                                                |                                                                     |                                                |
| 15:30–16:00          |                                                |                                                                     |                                                |
| 16:00–16:30          |                                                |                                                                     |                                                |
| 16:30–17:00          | Chair: Russo<br>N. Petrović                    | Chair: Laurita<br>A. Cardone<br>E. Messina<br>M. Bulai<br>E. Denich | Chair: De Bonis<br>R. Uluchev                  |
| 17:00–17:30          |                                                |                                                                     |                                                |
| 17:30–18:00          |                                                |                                                                     |                                                |
| 18:00–18:30          | Registration                                   | Coffee Break                                                        | Closing and Coffee                             |
| 18:30–19:30          |                                                |                                                                     |                                                |
| 19:30–20:00          |                                                |                                                                     |                                                |
| 20:00–21:00          | Dinner                                         | Social Dinner                                                       | Dinner                                         |
| 21:30–00:00          |                                                |                                                                     |                                                |