

# PADOVA AND THE ABSOLUTE DIFFERENTIAL CALCULUS

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The aim of this talk is to highlight the close connections between the University of Padova and the history of the absolute differential calculus, particularly in the period preceding its consideration as the mathematical theory of general relativity. This concerns both the origins and early developments of tensor analysis, above all in relation to the central and differentiated roles played in this context by the research of Gregorio Ricci-Curbastro and Tullio Levi-Civita. Furthermore, the difficulties that the absolute differential calculus found at the time in terms of reception, especially at the national level, are of particular relevance here, being partly accepted from some points of view but not from others. A factor that further accentuated the role played by the scientific context of Padova in the initial phase of the theory's development.

## REFERENCES

- [1] DELL'AGLIO L., *On the genesis of the concept of covariant differentiation*, Revue d'histoire des mathématiques, 2, pp. 215–264, 1996.
- [2] GOODSTEIN J.R., *Einstein's Italian Mathematicians*, American Mathematical Society, Providence, Rhode Island, 2018.
- [3] LEVI-CIVITA T., *Nozione di parallelismo in una varietà qualunque e conseguente specificazione geometrica della curvatura riemanniana*, Rendiconti del Circolo Matematico di Palermo, 42, pp. 173–205, 1917.
- [4] REICH K., *Die Entwicklung des Tensorkalküls*, Birkhäuser, Basel, 1994.
- [5] RICCI-CURBASTRO G., *Sulla derivazione covariante ad una forma quadratica differenziale*, Rendiconti della Reale Accademia dei Lincei, s. 4, t. 3, pp. 15–18, 1887.
- [6] RICCI-CURBASTRO G., *Sopra certi sistemi di funzioni*, Rendiconti della Reale Accademia dei Lincei, s. 4, t. 5, pp. 112–118, 1889.
- [7] RICCI-CURBASTRO G., LEVI-CIVITA T., *Méthodes de calcul différentiel absolu et leurs applications*, Mathematische Annalen, 54, pp. 125–201, 1901.