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We consider matrix orthogonal polynomials related to Laguerre type matrices of weights that can be defined in terms of a given matrix Pearson equation. Stating a Riemann–Hilbert problem we can derive first and second order differential relations satisfied by matrix orthogonal polynomials and the associated second kind functions . Finally, non-Abelian extensions of a family of discrete Painlevé d-PIV equations are obtained for the three term recurrence relation coefficients.

Joint work with AMÍLCAR BRANQUINHO (Universidade de Coimbra, Portugal), ANA FOULQUIÉ-MORENO (Universidade de Aveiro, Portugal) and MANUEL MAÑAS (Universidad Complutense de Madrid, Spain).