



Universidad de Valladolid



Nonlinear PDEs are integrable: Painlevé Property, Lax pairs and solitons

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Abstract: Nonlinear partial differential equations (PDEs) emerge as an active research topic of growing interest during the last decades due to their versatility when it comes to describing physical phenomena. In particular, a narrow group of this kind stands out for its remarkable properties: the so-called integrable systems. The Painlevé Property has proved to be a fruitful tool when it comes to identifying the integrability of nonlinear PDEs. The combination of this technique with the singular manifold method offers an ideal framework to approach nonlinear integrable systems: it provides a systematic methodology to obtain the associated Lax pair, as well as a recursive procedure to determine soliton solutions. In this talk, we review the main details of this setting, with applications on several examples related to Nonlinear Schrödinger equations.



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