

Integrability of Equations Admitting Non Local Symmetries

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The integration of ordinary differential equations by nonlocal symmetries has been studied by many authors ([1], [2], etc.). The general method of reduction associated to \mathcal{C}^∞ -symmetries ([3]) is applied to give a complete classification of ordinary differential equations of arbitrary order that admit an specific type of nonlocal symmetries. We give explicit transformations to reduce the order of this kind of equations, that includes several cases of equations without Lie symmetries. For the particular case of first order equations, the method provides the linerization of the equation. This is applied to general types of equations not given in integrable form, including some examples of Riccati equations and Abel equations of the second kind.

References

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