



Mathematical Physics

Solving Linear Differential Equations: A Novel Approach

N. Gurappa, Abhijit Sen, Rajneesh Atre, Prasanta K. Panigrahi

(Submitted on 2 May 2012)

We explicate a procedure to solve general linear differential equations, which connects the desired solutions to monomials x^m of an appropriate degree m . In the process the underlying symmetry of the equations under study, as well as that of the solutions are made transparent. We demonstrate the efficacy of the method by showing the common structure of the solution space of a wide variety of differential equations viz. Hermite, Laguerre, Jacobi, Bessel and hypergeometric etc. We also illustrate the use of the procedure to develop approximate solutions, as well as in finding solutions of many particle interacting systems.

Comments: 12 pages, 1 table. arXiv admin note: substantial text overlap with [arXiv:quant-ph/0204130](https://arxiv.org/abs/1205.0385)

Subjects: **Mathematical Physics (math-ph)**; Analysis of PDEs (math.AP)

Cite as: [arXiv:1205.0385v1](https://arxiv.org/abs/1205.0385v1) [math-ph]

Submission history

From: Prasanta K. Panigrahi [[view email](#)]
[v1] Wed, 2 May 2012 11:16:42 GMT (12kb)

[Which authors of this paper are endorsers?](#)

Link back to: [arXiv](#), [form interface](#), [contact](#).

Download:

- [PDF](#)
- [PostScript](#)
- [Other formats](#)

Current browse context:

math-ph

[< prev](#) | [next >](#)

[new](#) | [recent](#) | [1205](#)

Change to browse by:

[math](#)

[math.AP](#)

References & Citations

- [NASA ADS](#)

Bookmark (what is this?)

