

Generalized integro-differential algebra from an operator point of view

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Differential algebras with a right inverse of their derivation are a generalization of integro-differential algebras where the induced evaluation is not required to be multiplicative. Using our new two-level tensor setting for algebras of linear operators, we systematically rediscover identities, e.g. integration by parts, in these generalized integro-differential algebras. This is done by a completion process similar to Buchberger's algorithm starting just from the algebraic axioms. We also illustrate how other formulas, like the Taylor formula or variation of constants, can be proven in this operator framework.

References

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