Direct Integration Preconditioning For Solving Optimal Control Problems

Author(s):
El-Kady, M (El-Kady, M.)[١]; El-desouky, BS (El-desouky, B. S.)[٢]; Biomy, M (Biomy, M.)[٢]
E-mail Address: b_desouky@yahoo.com; cakic@etf.rs
[١] Mansoura Univ, Dep Comp Sci, Fac Comp & Info, Mansoura, Egypt
[٢] Univ Belgrade, Fac Elect Engn, Dept Math, Belgrade ١١١٢٠, Serbia

Abstract

In this paper new explicit expressions for both kinds of Comtet numbers and some interesting special cases are derived. Moreover, we define and study the generalized multiparameter non-central Stirling numbers and generalized Comtet numbers via differential operators. Furthermore, recurrence relations and new explicit formulas for those numbers are obtained. Finally some interesting special cases, new combinatorial identities and a connection between these numbers and some interesting polynomials are deduced. (C) ٢٠١١ Elsevier Ltd. All rights reserved.

KeyWords: Differential operators; Generalized multiparameter non-central Stirling numbers; Generalized Comtet numbers; Generalized Truesdel polynomials; Generalized Bell polynomials; Generalized Dobinski formula

Published in : MATHEMATICAL AND COMPUTER MODELLING Volume: ٥٤ Issue: ١١-١٢ Pages: ٢٨٤٨-٢٨٥٧ DOI: ١٠.١٠١٦/j.mcm.٢٠١١.٠٧.٠٠٥ Published: DEC ٢٠١١

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Generalized higher order Stirling numbers

Author(s):
El-Desouky, BS (El-Desouky, B. S.)[١]; Cakic, NP (Cakic, Nenad P.)[٢]
E-mail Address: m_el_kady@hotmail.com; yousef_eldest@yahoo.com
[١] Helwan Univ, Fac Sci, Dept Math, Cairo, Egypt
[٢] Suez Canal Univ, Fac Sci, Dept Math, Port Said, Egypt

Abstract

In this paper, direct integration preconditioning is proposed to solve optimal control problems governed by ordinary differential equations. Legendre approximations are used to reduce the problem to a constrained optimization problem. Error estimation for the Legendre approximations is derived and a technique that gives an optimal approximation of the problems is introduced. Numerical results are included to confirm the efficiency and accuracy of the method.

KeyWords: Spectral methods; approximation by Legendre polynomials; optimal control problems
Published in : MATHEMATICAL AND COMPUTER MODELLING Volume: ٥٤ Issue: ١١-١٢ Pages: ٢٨٤٨-٢٨٥٧ DOI: ١٠.١٠١٦/j.mcm.٢٠١١.٠٧.٠٠٥ Published: DEC ٢٠١١

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COMPUTATIONAL AND APPLIED MATHEMATICS Volume: ٨٩ Issue: ١ Pages: ٥٣-٧٢ DOI: ١٠.١٠١٦/S٠٣٧٧-٠٤٢٧(٩٧)٠٠٢٢٨-٨ Abstract Number: B١٩٩٨-٠٨-٠٢٩٠P-٠١١; C١٩٩٨-٠٨-٤١٧٠-٠١٢ Published: MAR ٩ ١٩٩٨
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Modified approach to generalized Stirling numbers via differential operators

Author(s):
El-Desouky, BS (El-Desouky, B. S.)[١]; Cakic, NP (Cakic, Nenad P.)[٢]; Mansour, T(Mansour, Toufik)[٣]

E-mail Address: b_desouky@yahoo.com; cakic@etf.bg.ac.yu; toufik@math.haifa.ac.il

[١] Suez Canal Univ, Dept Math, Fac Sci, Ismailia, Egypt

[٢] Univ Belgrade, Dept Math, Fac Elect Engn, Belgrade ١١١٢٠, Serbia

Abstract

In this paper new explicit expressions for both kinds of Comtet numbers and some interesting special cases are derived. Moreover, we define and study the generalized multiparameter non-central Stirling numbers and generalized Comtet numbers via differential operators. Furthermore, recurrence relations and new explicit formulas for those numbers are obtained. Finally some interesting special cases, new combinatorial identities and a connection between these numbers and some interesting polynomials are deduced. (C) ٢٠١١ Elsevier Ltd. All rights reserved.

KeyWords: Stirling numbers; Generalized Stirling numbers; Combinatorial identities; Normal ordering; Boson operators
Published in : APPLIED MATHEMATICS LETTERS Volume: ٢٣ Issue: ١ Pages: ١١٥-١٢٠ DOI: ١٠.١٠١٦/j.aml.٢٠٠٩.٠٨.٠١٨ Published: JAN ٢٠١٠

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