Curriculum Vitae

Personal Information

Last Name / First Name: **Cotfas Nicolae**
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Nationality: Romanian
Date of birth: 23 April 1954

Education

1998 *PhD in Physics*, Institute National Polytechnique de Grenoble, France
1996 *PhD in Mathematics*, University of Bucharest, Romania
1974-1978 University of Bucharest, Faculty of Mathematics, Romania

Teaching

Complements of Mathematics
Linear Algebra
Mathematical Analysis
Complex Analysis
Differential Equations
Equations of Mathematical Physics
Elements of Differential Geometry
Lie Groups, Lie Algebras and Their Representations
Theory of Curves and Surfaces

Reviewer

Journal of Mathematical Physics
Journal of Physics A: Mathematical and Theoretical
Physics Letters A
Journal of Geometry and Physics
Central European Journal of Physics
Annales Henri Poincare
Mathematical Reviews
Zentralblatt MATH

Research interests

Coherent states and their applications to quantum mechanics
Finite frames and finite frame quantization
Orthogonal polynomials, special functions and their applications to quantum mechanics
Mathematical models for quasicrystals and carbon nanotubes

Research grants

- IDEI 992, contract 31 (2007-2010) Homogeneous methods for the study of some nonlinear phenomena in complex heterogeneous media
- CEx05-D10-02 (2005-2008) Nuclear structure, double beta decay, fusion, fision and nuclear multifragmentation
- CEx05-D11-03 (2005-2008) Description of fundamental features for some atomic and nuclear processes
- CERES 4-192 (2004-2006) Symmetries and new phases of multi-nucleonic systems, exotic phenomena in the synthesis process of heavy and superheavy elements

- CERES 4-129 (2004-2006): Mathematical formalisms for describing quasicrystals and atomic clusters (director)
- CNCSIS (2004-2006): Representations of the symmetry groups of carbon nanotubes with applications in the physics of these materials (director)
- CERES 2-24 (2001-2003) An operatorial approach to hypergeometric type equations with application to quantum mechanics
- CNCSIS (2001-2003): Applications of group theory in quasicrystal physics (director)

Published papers (cumulated ISI impact factor (divided by the number of authors) ≈ 31.474)

- Nicolae Cotfas and Liviu Adrian Cotfas: *Hypergeometric type operators and their supersymmetric partners*, **Journal of Mathematical Physics 52** (2011) 052101 (ISI impact factor ≈ 1.318)
- Nicolae Cotfas, Jean Pierre Gazeau and Apostol Vourdas: *Finite-dimensional Hilbert space and frame quantization*, **Journal of Physics A: Mathematical and Theoretical 44** (2011) 175303 (ISI impact factor ≈ 1.577)
- Nicolae Cotfas, Jean Pierre Gazeau and Katarzyna Gorska: *Complex and real Hermite polynomials and related quantizations*, **Journal of Physics A: Mathematical and Theoretical 43** (2010) 305304 (ISI impact factor ≈ 1.577)
- Nicolae Cotfas and Jean Pierre Gazeau: *Finite tight frames and some applications* (review paper), **Journal of Physics A:Mathematical and Theoretical 43** (2010) 193001 (ISI impact factor ≈ 1.577)
- N. Cotfas: *Gazeau-Klauder type coherent states for hypergeometric type operators*, **Central European Journal of Physics 7** (2009) 147-159 (ISI impact factor 0.728)
- N. Cotfas: *Symmetry properties of Penrose type tilings*, **Philosophical Magazine 88** (2008) 2017-2023 (ISI impact factor 1.354)
- N. Cotfas: *Aperiodic packings of clusters obtained by projection*, **Philosophical Magazine 87** (2007) 2823 (ISI impact factor 1.354)
- N. Cotfas: *On the linear representations of the symmetry groups of single-wall carbon nanotubes*, **Journal of Physics A: Mathematical and General 39** (2006) 9755-9765 (ISI impact factor 1.577)
- N. Cotfas: *Shape invariant hypergeometric type operators with application to quantum mechanics*, **Central European Journal of Physics 4** (2006) 318-330 (ISI impact factor 0.811)
- N. Cotfas:*Discrete quasiperiodic sets with predefined local structure*, **Journal of Geometry and Physics 56** (2006) 2415-2428 (ISI impact factor 0.956)
- N. Cotfas: *Discrete quasiperiodic sets with predefined covering cluster*, **Philosophical Magazine 86** (2006) 895-900 (ISI impact factor 1.354)
- N. Cotfas: *Systems of orthogonal polynomials defined by hypergeometric type equations*, **Electronic Transactions on Numerical Analysis (ETNA) 24** (2006) 45-54 (ISI impact factor 0.738)
- N. Cotfas: *An alternate mathematical model for single-wall carbon nanotubes*, **Journal of Geometry and Physics 55** (2005) 123-134 (ISI impact factor 0.607)
- N. Cotfas: *Representations of the Icosahedral Group with Application to Quasicrystals*, **Ferroelectrics 305** (2004) 33-36 (ISI impact factor 0.517)
- N. Cotfas: *Systems of orthogonal polynomials defined by hypergeometric type equations with application to quantum mechanics*, **Central European Journal of Physics 2** (2004) 456-466 (ISI impact factor 0.375)
- N. Cotfas: *Icosahedral multi-component model sets*, **Journal of Physics A: Mathematical and General 37** (2004) 3125-3132 (ISI impact factor 1.504)

- N. Cotfas: *Special functions, raising and lowering operators*, **Inst. Phys. Conf. Ser. 173** (2003) 649-652 (ISI impact factor 0.101)
- N. Cotfas: *Shape invariance, raising and lowering operators in hypergeometric type equations*, **Journal of Physics A: Mathematical and General 35** (2002) 9355-9365 (ISI impact factor 1.406)
- N. Cotfas:*Penrose-type patterns obtained by projection from a 12D lattice*, **Journal of Physics A: Mathematical and General 34** (2001) L479-L482 (ISI impact factor 1.453)
- N. Cotfas: *Quantum random walks on carbon nanotubes and quasicrystals*, **Journal of Physics A: Mathematical and General 33** (2000) 2917-2927 (ISI impact factor 1.365)
- N. Cotfas: *A group-theoretic approach to quasicrystals*, **Ferroelectrics 250** (2001) 317-320 (ISI impact factor 0.471)
- N. Cotfas: *Finite graphs associated with a cut-and-project set*, **Czechoslovak Journal of Physics 51** (2001) 301-304 (ISI impact factor 0.345)
- N. Cotfas: *Systems of coherent vectors*, **Journal of Physics A:Mathematical and General 33** (2000) 5003 (ISI impact factor 1.365)
- N. Cotfas: *G-model sets and their self-similarities*, **Journal of Physics A: Mathematical and General 32** (1999) 8079-8093 (ISI impact factor 1.387)
- N. Cotfas: *On the self-similarities of a model set*, **Journal of Physics A: Mathematical and General 32** (1999) L165-L168 (ISI impact factor 1.387)
- N. Cotfas: *Permutation representations defined by G-clusters with application to quasicrystals*, **Letters in Mathematical Physics 47** (1999) 111-123 (ISI impact factor 0.803)
- N. Cotfas: *On the affine self-similarities of he three-dimensional Penrose pattern*, **Journal of Physics A: Mathematical and General 31** (1998) 7273-7277 (ISI impact factor 1.545)
- N. Cotfas: *On the self-similarities of two icosahedral patterns*, **Z. Kristallogr. 213** (1998) 311-315 (ISI impact factor 0.583)
- N. Cotfas: *Elements of discrete differential calculus with applications to crystal physics*, **Journal of Geometry and Physics 24** (1998) 291-302 (ISI impact factor 0.776)
- N. Cotfas and J-L Verger-Gaugry: *A mathematical construction of n-dimensional quasicrystals starting from G-clusters*, **Journal of Physics A: Mathematical and General 30** (1997) 4283-4291 (ISI impact factor 1.480)
- N. Cotfas: *A mathematical model for diamond-type crystals*, **Journal of Physics A: Mathematical and General 28** (1995) 1371-1379 (ISI impact factor 1.480)
- N. Cotfas: *Elements of tight-binding method in terms of graph theory*, **Journal de Physique I (France) 3** (1993) 2269-2284 (ISI impact factor 1.200)
- N. Cotfas: *Topological manifolds and vector bundles with applications to crystal physics*, **Journal of Geometry and Physics 10** (1993) 107-126 (ISI impact factor 0.758)
- N. Cotfas: *Diamond structure in a natural description*, **Journal of Physics:Condens. Matter 3** (1991) 9279-9296 (ISI impact factor 1.479)

Recently published books (in Romanian)

- N. Cotfas and L.A. Cotfas: *Elemente de Analiza Matematica*, **Editura Universitatii din Bucuresti** ISBN: 978-973-737-869-9, 2010, 264 pagini
- N. Cotfas and L.A. Cotfas: *Complemente de Matematica*, **Editura Universitatii din Bucuresti** ISBN: 978-973-737-717-3, 2009, 206 pagini

- N. Cotfas: *Elemente de Algebra Liniara.* **Editura Universitatii din Bucuresti** ISBN: 978-973-737-635-0, 2009, 202 pagini

Conferences

- N. Cotfas: *Ecuatii de tip Schrodinger rezolvabile explicit* (in Romanian) **Facultatea de Fizica** (Bucuresti, 24 martie 2011)
- N. Cotfas: *Coverings with regular polygons obtained by projection*, **Quasicrystals. The Silver Jubilee** (Tel Aviv, Israel, Oct. 14-19, 2007)
- N. Cotfas: *Permutation representations with application to quasicrystals and carbon nanotubes*, **17th Symposium on Condensed Matter Physics- SFKM 2007** (Vrsac, Serbia, Sept. 16-20, 2007)
- N. Cotfas: *Modified version of the strip projection method and applications*, **International Conference on Aperiodic Crystals** (Zao, Miyagi, Japan, Sept. 17-22, 2006)
- N. Cotfas: *Group representations with application to quasicrystals and carbon nanotubes*, **26th International Colloquium on Group Theoretical Methods in Physics** (New York, June 26-30, 2006)
- N. Cotfas: *Shape invariant hypergeometric type operators and applications*, **MASSEE International Congress on Mathematics MICOM-2006** (Paphos, Cyprus, May 31- June 4, 2006)
- N. Cotfas: *Associated hypergeometric-type functions and coherent states*, **8th WSEAS International Conference on APPLIED MATHEMATICS** (Puerto De La Cruz, Tenerife, Dec. 16-18, 2005)
- N. Cotfas: *Symmetries of hypergeometric type special functions*, **4th International Symposium "Quantum Theory and Symmetries"** incorporating 6th International Workshop "Lie Theory and Its Applications in Physics" (Varna, August 15-21, 2005)
- N. Cotfas: *An alternate mathematical model for single-wall carbon nanotubes*, **6th International Conference on the Science and Application of Nanotubes** (Goteborg, June 26-July 1, 2005)
- N. Cotfas: *On the self-similarities of the mathematical models used in quasicrystal physics*, **Second Conference on Self-Similarity and Applications** (Toulouse, June 20-24, 2005)
- N. Cotfas: *Permutation representations defined by G-clusters with application to quasicrystal physics*, **Discrete Groups and Geometric Structures with Applications IV** (Oostende, May 31-June 3, 2005)
- N. Cotfas: *Representations of the symmetry groups of carbon nanotubes and applications*, **Discrete Groups and Geometric Structures with Applications IV** (Oostende, May 31-June 3, 2005)
- N. Cotfas: *On the strip projection method and symmetry properties of the window*, **9th International Conference on Quasicrystals ICQ9** (Ames (Iowa-USA), May 22-26, 2005)
- N. Cotfas: *Quasiperiodic packings of icosahedral clusters obtained by projection*, **2th National Conference on Theoretical Physics** (Constanta, August 26-29, 2004)
- N. Cotfas: *Quasiperiodic packings of icosahedral clusters obtained by projection*, **11th International Conference "Symmetry Methods in Physics"** (Prague, June 21-24, 2004)
- N. Cotfas: *Quasiperiodic packings of icosahedral clusters obtained by projection*, **Fourth European Congress of Mathematics** (Stockholm, June 27-July 2, 2004)
- N. Cotfas: *Systems of orthogonal polynomials defined by hypergeometric type equations*, **Fourth European Congress of Mathematics** (Stockholm, June 27-July 2, 2004)
- N. Cotfas: *Systems of orthogonal polynomials defined by hypergeometric type equations*, **International Workshop on Orthogonal Polynomials: Orthogonal Polynomials and Mathematical Physics** (Leganes, July 5-8, 2004)

- N. Cotfas: *Representations of the icosahedral group with application to quasicrystals*, **International Conference on Aperiodic Crystals** (Bello Horizonte (Brazil), Sept. 8-13, 2003)
- N. Cotfas: *Hypergeometric type functions in a supersymmetric approach*, **XIV International Congress on Mathematical Physics, Lisbon** (July 28-August 2, 2003)
- N. Cotfas: *Raising and lowering operators in the theory of hypergeometric type equations*, **5th Congress of Romanian Mathematicians** (Pitesti, June 22-28, 2003)
- N. Cotfas: *Special functions, raising and lowering operators*, **XXIV International Colloquium on Group Theoretical Methods in Physics** (Paris, July 15-20, 2002)
- N. Cotfas: *A group-theoretic approach to quasicrystals*, **International Conference on Aperiodic Crystals** (Nijmegen (Holland), July 2000)
- N. Cotfas: *Finite graphs associated with a cut-and-project set*, **DI-CRM Workshop on Mathematical Physics** (Prague, June, 2000)
- N. Cotfas: *Self-similarities of model sets and their diffraction spectrum*, **7th International Conference on Quasicrystals** (Stuttgart, Sept. 1999)
- N. Cotfas and J. L. Verger-Gaugry: *Models of quasicrystals defined by G-clusters and their self-similarities*, **Mathematics of Quasicrystals** (Paris, Sept. 23-25, 1998)
- N. Cotfas and J.-L. Verger-Gaugry: *G-clusters and quasicrystals*, **International Conference on Aperiodic Crystals** (Alpe d'Huez, August, 1997)
- N. Cotfas: *Cluster models of quasicrystals obtained by using n-dimensional permutation representations of finite groups associated wuth their orbits*, **Colloque Quasicristaux** (Paris , June 5-7, 1996)
- N. Cotfas: *4-Dimensional crystallography and the diamond structure*, **Quasicrystals International School Balatonfured** (Hungary, May 13-20, 1995)
- N. Cotfas: *Une classe d'operateurs Oh7-invariants et applications dans la physique des semiconducteurs*, **Colloque franco-roumain de mathematiques purres et appliquees** (Paris, May 1-8, 1994)