



Universitatea Babeș-Bolyai Competiția Excelenței 2010

Dosar individual

Notă: Toate datele se referă la perioada 2005-2009

Nume, prenume, grad did.	BENEA DIANA ANCUTA
Facultatea, Catedra	Facultatea de Fizica,
Domeniul științific	Fizica corpului solid
Adresa paginii web personale	
Adresa e-mail	diana.benea@phys.ubbcluj.ro

Criteriul I – Output (60%)

total punctaj: 859.88+6.67+36.8= 903,35

- Articole științifice publicate în reviste indexate ISI (cu menționare factorului de impact în cazul celor cotate):

8 articole	859,88 pct
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In cazul in care nu are Factor de impact ISI :

1 articol	6,67 pct
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- Cărți științifice publicate în edituri naționale acreditate

1 carte	36,80 pct
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Criteriul II – Prestigiu profesional 30%

total punctaj: 90 + 420 + 291= 801 pct

- Citări ale articolelor ISI listate la Criteriul I

9 citari	90 pct
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- Citări în perioada 05-09 ale articolelor anterioare anului 2005

42 citari	420 pct
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- Participări la programe/granturi finanțate din sursă națională (se menționează și valoarea)

Coordonator (1 program national), membru (12 contracte nati onale)	291pct
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Criteriul III. Realizare remarcabilă 10% (aplicat la total punctaj Criteriul III)

In perioada 2004-2006 m-am implicat in descrierea proprietatilor fundamentale ale solidelor magnetice folosind calculul structurii electronice de benzi. Ca si metoda de calcul pentru structura electronica de benzi am folosit in principal codul de calcul SPR-KKR dezvoltat de prof. Ebert la Universitatea din Muenchen.

Cea mai importanta contributie a mea la elaborarea programului de calcul amintit s-a referit la descrierea proprietatilor spectroscopice ale solidelor (profile Compton magnetice, spectre 2D-ACAR la anihilarea pozitronica) prin implementarea in codul de calcul mentionat mai sus a rutinelor de calcul specifice lor.

Experimentele de imprastiere Compton si respectiv anihilare pozitronica sunt relativ dificil de realizat si exista putine centre care fac acest lucru (ex: grupul de la Univ. Bristol, care realizeaza experimente de anihilare pozitronica, cu care am colaborat). Calcularea profilelor Compton si a celor 2D-ACAR reprezinta o metoda foarte utila folosita pentru interpretarea spectrelor experimentale respective, pentru studierea diverselor efecte ce apar in structura electronica (corelatii electronice, etc) si nu in ultimul rand pentru determinarea topologiei suprafetei Fermi a solidelor.

Rezultatele obtinute au fost publicate:

- A fully relativistic description of magnetic Compton profiles with an application to UFe_2* , D. Benea, S. Mankovsky and H. Ebert, Phys. Rev. B, **73** 094411 (2006) .

Total punctaj criteriul I si II: $0,6 \times 903,35 + 0,3 \times 801 = 542,01 + 240,3 = 782,3$ pct

Data:

16.03.2010

Semnătura:

Certific validitatea datelor prezentate

Sef de catedră,



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RECTORATUL

Universitatea Babeş-Bolyai Competiția Excelenței 2010

Dosar individual

Notă: Toate datele se referă la perioada 2005-2009

Nume, prenume, grad did.	BENEA DIANA ANCUTA, CS III
Facultatea, Catedra	FIZICA
Domeniul științific	Fizica corpului solid
Adresa paginii web personale	
Adresa e-mail	dbenea@phys.ubbcluj.ro

Criteriaul I – Output 60% (aplicat la total punctaj Criteriaul I – Output)

1. Articole științifice publicate în reviste indexate ISI (cu menționare factorului de impact în cazul celor cotate)

Se acorda 30 puncte pentru fiecare articol si se tine cont de numărul de autori.

Formula de calcul: $(30 / \text{număr de autori}) \times \text{Factor de impact ISI} \times 10$

1. *Limitation of integral XMCD sum-rules for the early 3d elements*, A. Scherz, H. Wende, C. Sorg, K. Baberschke, J. Minar, **D. Benea** and H. Ebert, *Physica Scripta*, **T115** 586 (2005). IF=1.24

$$(30 / \text{număr de autori}) \times \text{Factor de impact ISI} \times 10 = (30/7) \times 1.24 \times 10 = 53.14$$

2. *Crystal structures, unusual magnetic properties and electronic band structures of $Cr_{5-x}Ti_xTe_8$* , Z. L. Huang, W. Bensch, **D. Benea** and H. Ebert, *J. Solid State Chem.* **178** 2778 (2005). IF=1.725

$$(30 / \text{număr de autori}) \times \text{Factor de impact ISI} \times 10 = 30/4 \times 1.725 \times 10 = 129.375$$

3. *Preparation, Crystal Structure, Properties and Electronic Band Structure of $TlTaSe_3$* , C. Teske, W. Bensch, **D. Benea**, J. Minar and H. Ebert, *Z. Naturforsch.*, **60b** 858 (2005). IF=0.798

$$(30 / \text{număr de autori}) \times \text{Factor de impact ISI} \times 10 = 30/5 \times 0.798 \times 10 = 47.88$$

4. *A fully relativistic description of magnetic Compton profiles with an application to UFe_2* , **D. Benea**, S. Mankovsky and H. Ebert, *Phys. Rev. B*, **73** 094411 (2006). IF=3.107

$$(30 / \text{număr de autori}) \times \text{Factor de impact ISI} \times 10 = (30/3) \times 3.107 \times 10 = 310.7$$

5. *Magnetic behavior of iron in $Tb_{1-x}Zr_xFe_2$ compounds*, R. Tetean, E. Burzo, I. G. Deac, V. Pop and **D. Benea**, *J. of Magn. Magn. Materials* **316**, 387 (2007). IF=1.704

$$(30 / \text{număr de autori}) \times \text{Factor de impact ISI} \times 10 = (30/5) \times 1.704 \times 10 = 102.24$$

6. *Electronic Structure and Magnetic Properties of $ThCo_5B$ intermetallic compound*, **D. Benea**, V. Pop and O. Isnard, *J. of Magn. Magn. Materials* **320**, 36 (2008). IF=1.283

(30 / număr de autori) x Factor de impact ISI x 10=30/3x1.283x10=128.3

7. *Electronic structure and magnetic properties of HoCo_{5-x}Si_x system*, **D. Benea**, O. Isnard, N. Coroian and V. Pop, J. of Optoelectronics and Adv. Materials 10, 1767 (2008). IF=0.577

(30 / număr de autori) x Factor de impact ISI x 10=30/4x0.577x10=43.275

8. *Effects of substitution of Ni by Sb in MnNi*, R. Pacurariu, V. Rednic, M. Coldea, **D. Benea**, V. Pop, O. Isnard and M. Neumann, Phys. Status Solidi (b), 246, 50-55 (2009). (IF=1.166 in 2008)

(30 / număr de autori) x Factor de impact ISI x 10=30/7x1.16x10=49.97

TOTAL=859.88

2. Articole științifice publicate în ISI proceedings

Se acorda 30 puncte pentru fiecare articol si se tine cont de numărul de autori.

Formula de calcul: (30 / număr de autori) x Factor de impact ISI x 10

In cazul in care nu are Factor de impact ISI

Se acorda 20 puncte pentru fiecare articol si se tine cont de numărul de autori.

Formula de calcul: 20 / număr de autori

1. *Magnetic Properties in ThCo₄B system*, **D. Benea**, V. Pop, O. Isnard, AIP Conference proceedings 899, 587 (2007).

20/3=6.66

6. Cărți științifice publicate în edituri naționale acreditate

Se acorda 20 puncte pentru fiecare 100 pagini si se tine cont de numărul de autori.

Formula de calcul: [(număr de pagini / 100) x 20] / număr de autori

Theoretical description of magnetic Compton scattering and magnetic properties of Cr-chalcogenide compounds, **Diana Benea**, Risoprint 2005, 184 p

[(număr de pagini / 100) x 20] / număr de autori=36.8

TOTAL CRITERIUL I = 903.34

Criteriaul II – Prestigiu profesional 30% (aplicat la total punctaj Criteriaul II)

1. Citări ale articolelor ISI listate la Criteriaul I

Formula de calcul: număr citari x 10

1. *Limitation of integral XMCD sum-rules for the early 3d elements*, A. Scherz, H. Wende, C. Sorg, K. Baberschke, J. Minar, **D. Benea** and H. Ebert, Physica Scripta, T115 586 (2005). IF=1.24

Citat de:

Title: [Element-specific spin and orbital moments in Fe1-xVx alloys](#)

- 1.Author(s): Guan Y, Scheck C, Bailey WE

Source: JOURNAL OF MAGNETISM AND MAGNETIC MATERIALS Volume: 321 Issue: 8 Pages: 1039-1044 Published: APR 2009

- 2>Title: [A Closer Look Into Magnetism: Opportunities With Synchrotron Radiation](#)

Author(s): Durr HA, Eimuller T, Elmers HJ, et al.

Source: IEEE TRANSACTIONS ON MAGNETICS Volume: 45 Issue: 1 Pages: 15-57 Part: Part 1 Published: JAN 2009

- 3.Title: [Fe-porphyrin monolayers on ferromagnetic substrates: Electronic structure and magnetic coupling strength](#)

Author(s): Bernien M, Xu X, Miguel J, et al.

- 4 Source: PHYSICAL REVIEW B Volume: 76 Issue: 21 Article Number: 214406 Published: DEC 2007

Title: [Influence of interdiffusion on the magnetic moments in Co/Au multilayers](#)

Author(s): Sivr O, Minar J, Vackar J, et al.

Source: PHYSICAL REVIEW B Volume: 75 Issue: 13 Article Number: 134422 Published: APR 2007

Total citari:4

Punctaj: $4 \times 10 = 40$

2. *Crystal structures, unusual magnetic properties and electronic band structures of $Cr_{5-x}Ti_xTe_8$* , Z. L. Huang, W. Bensch, **D. Benea** and H. Ebert, J. Solid State Chem. **178** 2778 (2005). IF=1.725

Citat de:

1 Title: [A study of the reactivity of elemental Cr/Se/Te thin multilayers using X-ray reflectometry, in situ X-ray diffraction and X-ray absorption spectroscopy](#)

Author(s): Behrens M, Tomforde J, May E, et al.

Source: JOURNAL OF SOLID STATE CHEMISTRY Volume: 179 Issue: 11 Pages: 3330-3337 Published: NOV 2006

Total citari :

Punctaj: $1 \times 10 = 10$

3. *A fully relativistic description of magnetic Compton profiles with an application to UFe_2* , **D. Benea**, S. Mankovsky and H. Ebert, Phys. Rev. B, **73** 094411 (2006) . IF=3.107

Citat de:

[Electronic Structure and Compton Profiles of Tungsten](#)

1.Author(s): Ahuja BL, Rathor A, Sharma V, et al.

Source: ZEITSCHRIFT FUR NATURFORSCHUNG SECTION A-A JOURNAL OF PHYSICAL SCIENCES

Volume: 63 Issue: 10-11 Pages: 703-711 Published: OCT-NOV 2008

2 [Electronic structure of rhodium using Compton profiles: Experiment and theory](#)

Author(s): Ahuja BL, Sharma V, Rathor A, et al.

Source: NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH SECTION B-BEAM

INTERACTIONS WITH MATERIALS AND ATOMS Volume: 262 Issue: 2 Pages: 391-398 Published: SEP 2007.

3.

[Study of electronic structure and Compton profiles of PbS and PbSe](#)

Author(s): Heda, N.L., Rathor, A., Sharma, V., Ahmed, G., Sharma, Y., Ahuja, B.L.

Source: *Journal of Alloys and Compounds* 463 (1-2), pp. 47-54, 2008.

Link: <http://www.sciencedirect.com/science/journal/09258388>

Nr citari:3

Punctaj= $3 \times 10 = 30$

4. *Electronic Structure and Magnetic Properties of $ThCo_4B$ intermetallic compound*, **D.Benea**, V. Pop and O. Isnard, J. of Magn. Magn. Materials 320, 36 (2008). IF=1.283

Citat de:

- 1 [1. Electronic band structure, specific heat, and Pt-195 NMR studies of the filled skutterudite superconductor \$ThPt_4Ge_{12}\$](#) , Author(s): Tran VH, Nowak B, Jezierski A, et al. Source: PHYSICAL REVIEW B Volume: 79 Issue: 14 Article Number: 144510 Published: APR 2009

Nr citari:1

Punctaj= $1 \times 10 = 10$

Total partial: 90

3. Citări în perioada 2005-2009 ale articolelor anterioare anului 2005

Formula de calcul: număr citari x 10

1. *Substitution Effects on Structure and Magnetism in Chromium Chalcogenide Cr_5Te_8 . Part one: Cluster Glass Behaviour in Trigonal $Cr_{1+x}Q_2$ with Basic Cell ($Q=Te, Se; Te:Se=7:1$)*, Z. L. Huang, W. Bensch, D. Benea and H. Ebert, J. Solid State Chem. **177** 3245 (2004). IF=1.815

Citat de:

1 Title: [A study of the reactivity of elemental Cr/Se/Te thin multilayers using X-ray reflectometry, in situ X-ray diffraction and X-ray absorption spectroscopy](#)

Author(s): Behrens M, Tomforde J, May E, et al.

Source: JOURNAL OF SOLID STATE CHEMISTRY Volume: 179 Issue: 11 Pages: 3330-3337 Published: NOV 2006

2 Title: [Coexistence of two electronic phases in \$LaTiO_3 + \delta\$ \(\$0.01 \leq \delta \leq 0.12\$ \) and their evolution with \$\delta\$](#)

Author(s): Zhou HD, Goodenough JB

Source: PHYSICAL REVIEW B Volume: 71 Issue: 16 Article Number: 165119 Published: APR 2005

Nr citari:2

Punctaj: $2 \times 10 = 20$

2. *Direct observation of the multisheet Fermi surface in the strongly correlated transition metal compound $ZrZn_2$* , Zs. Major, S. B. Dugdale, R. J. Watts, G. Santi, M. A. Alam, S. M. Hayden, J. A. Duffy, J. W. Taylor, T. Jarlborg, E. Bruno, **D. Benea** and H. Ebert, Phys. Rev. Lett. **92**, 107003 (2004). IF=7.218

Citat de:

- 1 Title: [Fermiology via the electron momentum distribution](#)
Author(s): Kontrym-Sznajd G
Source: LOW TEMPERATURE PHYSICS Volume: 35 Issue: 8-9 Pages: 599-609 Published: AUG-SEP 2009
Times Cited: 0
- 2 Title: [Bulk Spin Polarization of \$Co\(1-x\)Fe_xS_2\$](#)
Author(s): Utfeld C, Giblin SR, Taylor JW, et al.
Source: PHYSICAL REVIEW LETTERS Volume: 103 Issue: 22 Article Number: 226403 Published: NOV 27 2009
3. **Electronic density of states and strong electron-phonon coupling in Nb 3Sn**
[Zemmour, K., Bendjemil, B.](#)
[Journal of Superconductivity and Novel Magnetism](#) 22 (5), pp. 431-438
2009
- 4 **Fermiology via the electron momentum distribution**
Author(s): Kontrym-Sznajd G
[Fizika Nizkikh Temperatur \(Kharkov\)](#) 35 (8-9), pp. 765-778
2009
5. Title: [Off-shell continuum distorted wave theory for positronium formation from noble gas atoms](#)
Author(s): Macri PA, Barrachina RO
Conference Information: 14th International Workshop on Low-Energy Positron and Positronium Physics, AUG 01-04, 2007 Univ Reading, Reading, ENGLAND
Source: NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH SECTION B-BEAM INTERACTIONS WITH MATERIALS AND ATOMS Volume: 266 Issue: 3 Pages: 393-396 Published: FEB 2008
6. Title: [Transform methods of computerized tomography in studying electronic structure and fermi surfaces of solids](#)
Author(s): Kontrym-Sznajd G
Conference Information: 37th Polish Seminar on Positron Annihilation, SEP 03-07, 2007 Ladek Zdroj, POLAND
Source: ACTA PHYSICA POLONICA A Volume: 113 Issue: 5 Pages: 1417-1427 Published: MAY 2008
7. Title: [High-resolution Compton line shapes: Fermi break of beryllium](#)
Author(s): Huotari S, Sternemann C, Volmer M, et al.
Source: PHYSICAL REVIEW B Volume: 76 Issue: 23 Article Number: 235106 Published: DEC 2007
8. Title: [Quantum metamagnetic transitions induced by changes in Fermi-surface topology: Applications to a weak itinerant-electron ferromagnet \$ZrZn_2\$](#)
Author(s): Yamaji Y, Misawa T, Imada M
Source: JOURNAL OF THE PHYSICAL SOCIETY OF JAPAN Volume: 76 Issue: 6 Article Number: 063702
Published: JUN 2007
9. Title: [Continuum distorted wave theory for positronium formation reactions](#)
Author(s): Macri PA
Conference Information: 13th International Workshop on Low-Energy Positron and Positronium Physics, JUL 24-30, 2005 Campinas, BRAZIL
Source: NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH SECTION B-BEAM INTERACTIONS WITH MATERIALS AND ATOMS Volume: 247 Issue: 1 Pages: 75-78 Published: JUN 2006
- 10 Title: [High-resolution photoemission study of \$ZrZn_2\$](#)
Author(s): Sato T, Iida Y, Souma S, et al.
Conference Information: 14th International Conference on Vacuum Ultraviolet Radiation Physics, JUL 19-23, 2004 Cairns, AUSTRALIA
Source: JOURNAL OF ELECTRON SPECTROSCOPY AND RELATED PHENOMENA Volume: 144
Special Issue: Sp. Iss. SI Pages: 889-891 Published: JUN 2005

11 Title: [Enhanced paramagnetic limit of the upper critical magnetic field for superconductors with charge-density waves](#)

Author(s): Gabovich A, Voitenko AI, Ekino T

Source: JOURNAL OF PHYSICS-CONDENSED MATTER Volume: 16 Issue: 21 Pages: 3681-3690

Published: JUN 2 2004

Nr citari: 11

Punctaj: =110

3. *Relation between $L_{2,3}$ XMCD and the magnetic ground-state properties for the early 3d element*, A. Scherz, H. Wende, K. Baberschke, J. Minar, **D. Benea** and H. Ebert, Phys. Rev. B **66**, 184402 (2002). IF=3.327

Citat de:

1. Title: [Enhancement of induced V polarization due to rough interfaces in polycrystalline V/Fe/V trilayers](#)

Author(s): Clavero C, Skuza JR, Choi Y, et al.

Source: PHYSICAL REVIEW B Volume: 80 Issue: 2 Article Number: 024418 Published: JUL 2009

Times Cited: 0

2. [Relativistic many-body XMCD theory including core degenerate effects](#)

Author(s): Fujikawa, T.

Source: *Journal of Physics: Conference Series* 190, art. no. 012014

2009

3. Title: [A new ultra-high-vacuum variable temperature and high-magnetic-field X-ray magnetic circular dichroism facility at LNLS](#)

Author(s): Figueiredo JJS, Basilio R, Landers R, et al.

Source: JOURNAL OF SYNCHROTRON RADIATION Volume: 16 Pages: 346-351 Part: Part 3

Published: MAY 2009

Times Cited: 0

4. Title: [Element-specific spin and orbital moments in Fe_{1-x}V_x alloys](#)

Author(s): Guan Y, Scheck C, Bailey WE

Source: JOURNAL OF MAGNETISM AND MAGNETIC MATERIALS Volume: 321 Issue: 8 Pages: 1039-1044 Published: APR 2009

Times Cited: 0

5. Title: [Growth and magnetic characterization of Co nanoparticles obtained by femtosecond pulsed laser deposition](#)

Author(s): Cebollada A, Martin JMG, Clavero C, et al.

Source: PHYSICAL REVIEW B Volume: 79 Issue: 1 Article Number: 014414 Published: JAN 2009

Times Cited: 0

6. Title: [Interface effects, magnetic, and magneto-optical properties of Al/Co/V/MgO\(100\) structures](#)

Author(s): Huttel Y, Clavero C, van der Laan G, et al.

Source: PHYSICAL REVIEW B Volume: 77 Issue: 6 Article Number: 064411 Published: FEB 2008

Times Cited: 2

7. Title: [The effect of strain and interfaces on the orbital moment in Fe/V superlattices](#)

Author(s): Bjorck M, Parnaste M, Marcellini M, et al.

Source: JOURNAL OF MAGNETISM AND MAGNETIC MATERIALS Volume: 313 Issue: 1 Pages: 230-235 Published: JUN 2007

Times Cited: 6

8. Title: [Spin and orbital magnetism in full Heusler alloys: A density functional theory study of Co\(2\)YZ \(Y = Mn, Fe; Z = Al, Si, Ga, Ge\)](#)

Author(s): Sargolzaei M, Richter M, Koepernik K, et al.

Source: PHYSICAL REVIEW B Volume: 74 Issue: 22 Article Number: 224410 Published: DEC 2006

Times Cited: 18

9. Title: [Induced magnetism at interfaces in ultra-thin epitaxial V/Gd bilayers](#)

Author(s): Baczewski LT, Pankowski P, Wawro A, et al.

Source: PHYSICAL REVIEW B Volume: 74 Issue: 7 Article Number: 075417 Published: AUG 2006

Times Cited: 8

10. Title: [Thin layers of Fe, Co and Ni on V\(2\)O\(3\) \(11\(2\)over-bar0\) and V2O3 \(0001\): A comparison of the interfacial magnetic interactions](#)

Author(s): Sass B, Buschhorn S, Felsch W, et al.

Source: JOURNAL OF MAGNETISM AND MAGNETIC MATERIALS Volume: 303 Issue: 1 Pages: 167-177 Published: AUG 2006

Times Cited: 2

11. Title: [From antiferromagnetic to ferromagnetic coupling for V adatoms on Co\(001\) substrates](#)
 Author(s): Carrillo-Cazares TA, Meza-Aguilar S, Demangeat C
 Source: EUROPEAN PHYSICAL JOURNAL B Volume: 48 Issue: 2 Pages: 249-254 Published: NOV 2005
 Times Cited: [6](#)
12. Title: [X-ray magnetic circular dichroism sum rule correction for the light transition metals](#)
 Author(s): Goering E
 Source: PHILOSOPHICAL MAGAZINE Volume: 85 Issue: 25 Pages: 2895-2911 Published: SEP 1 2005
 Times Cited: [11](#)

Nr. Citari: 12

Punctaj: $12 \times 10 = 120$

4. *X-ray magnetic circular dichroic magnetometry on Ni/Pt multilayers*, P. Pouloupoulos, F. Wilhelm, H. Wende, G. Ceballos, K. Baberschke, **D. Benea**, H. Ebert, M. Angelakeris, N. K. Flevaris, A. Rogalev and N. B. Brookes, *J. Appl. Physics*, **89** 3874 (2001). IF=2.128

Citat de:

1. Title: [Composition-dependent induced spin and orbital magnetic moments of Ir in Co-Ir alloys from x-ray magnetic circular dichroism](#)
 Author(s): Krishnamurthy VV, Singh DJ, Kawamura N, et al.
 Source: PHYSICAL REVIEW B Volume: 74 Issue: 6 Article Number: 064411 Published: AUG 2006
 Times Cited: [1](#)
2. Title: [Experimental evidence of the spin-dependence of electrons reflections in magnetic multilayers](#)
 Author(s): Snoeck E, Gatel C, Serra R, et al.
 Conference Information: Symposium on Spintronics held at the 2005 Spring Meeting of the European-Materials-Research-Society, MAY 31-JUN 03, 2005 Strasbourg, FRANCE
 Source: MATERIALS SCIENCE AND ENGINEERING B-SOLID STATE MATERIALS FOR ADVANCED TECHNOLOGY Volume: 126 Issue: 2-3 Pages: 120-125 Published: JAN 25 2006
 Times Cited: [1](#)
3. Title: [Depth profile of spin and orbital magnetic moments in a subnanometer Pt film on Co](#)
 Author(s): Suzuki M, Muraoka H, Inaba Y, et al.
 Source: PHYSICAL REVIEW B Volume: 72 Issue: 5 Article Number: 054430 Published: AUG 2005
 Times Cited: [7](#)
4. Title: [Ni-Pt multilayered nanowire arrays with enhanced coercivity and high remanence ratio](#)
 Author(s): Liang HP, Guo YG, Hu JS, et al.
 Source: INORGANIC CHEMISTRY Volume: 44 Issue: 9 Pages: 3013-3015 Published: MAY 2 2005
 Times Cited: [22](#)

Nr. Citari: 4

Punctaj: $4 \times 10 = 40$

5. *Layer-resolved magnetic moments in Ni/Pt multilayers*, F. Wilhelm, P. Pouloupoulos, G. Ceballos, H. Wende, K. Baberschke, P. Srivastava, **D. Benea**, H. Ebert, M. Angelakeris, N. K. Flevaris, D. Niarchos, A. Rogalev and N. B. Brookes, *Phys. Rev. Lett.* **85**, 413 (2000). IF=6.462

Citat de:

1. Title: [Electronic and magnetic properties of Pd-Ni multilayers: Study using density functional theory](#)
 Author(s): Gomez G, Cabeza GF, Belelli PG
 Source: JOURNAL OF MAGNETISM AND MAGNETIC MATERIALS Volume: 321 Issue: 20 Pages: 3478-3482 Published: OCT 2009
 Times Cited: 0
2. Title: [Magnetic moments in Fe-Co/Pt superlattices](#)
 Author(s): Bjorck M, Hedlund M, Andersson G
 Source: JOURNAL OF MAGNETISM AND MAGNETIC MATERIALS Volume: 320 Issue: 21 Pages: 2660-2664 Published: NOV 2008
 Times Cited: 0
3. Title: [CoCr/Pt multilayers with adjustable perpendicular anisotropy](#)
 Author(s): Papaioannou ET, Lenz K, Charilaou M, et al.
 Source: JOURNAL OF APPLIED PHYSICS Volume: 103 Issue: 9 Article Number: 093905 Published: MAY 1 2008
 Times Cited: 0

4. Title: [Tunneling anisotropic magnetoresistance in Multilayer-\(Co/Pt\)/AlOx/Pt structures](#)
 Author(s): Park BG, Wunderlich J, Williams DA, et al.
 Source: PHYSICAL REVIEW LETTERS Volume: 100 Issue: 8 Article Number: 087204 Published: FEB 29 2008
 Times Cited: [10](#)
5. Title: [Structural and magnetic properties of Ni/Pt multilayers](#)
 Author(s): Quiroga MA, Cabeza GF, Castellani NJ
 Conference Information: 13th International Conference on Solid Films and Surfaces (ICSFS 13), NOV 06-10, 2006 San Carlos de Bariloche, ARGENTINA
 Source: APPLIED SURFACE SCIENCE Volume: 254 Issue: 1 Special Issue: Sp. Iss. SI Pages: 355-359
 Published: OCT 31 2007
 Times Cited: [1](#)
6. Title: [Composition-dependent induced spin and orbital magnetic moments of Ir in Co-Ir alloys from x-ray magnetic circular dichroism](#)
 Author(s): Krishnamurthy VV, Singh DJ, Kawamura N, et al.
 Source: PHYSICAL REVIEW B Volume: 74 Issue: 6 Article Number: 064411 Published: AUG 2006
 Times Cited: [1](#)
7. Title: [Direct observation of the ferromagnetic spin polarization in gold nanoparticles: A review](#)
 Author(s): Yamamoto Y, Hori H
 Conference Information: 2nd Workshop on Functional Materials, SEP 25-28, 2005 Athens Univ, Phys Dept, Athens, GREECE
 Source: REVIEWS ON ADVANCED MATERIALS SCIENCE Volume: 12 Issue: 1 Pages: 23-32
 Published: MAY 2006
 Times Cited: [14](#)
8. Title: [Magnetic moment in the top Pt layer of Co/Pt bilayers](#)
 Author(s): Suzuki M, Miyagawa H, Kawamura N, et al.
 Source: PHYSICA SCRIPTA Volume: T115 Pages: 580-582 Published: 2005
 Times Cited: 0
9. Title: [Element-specific magnetic moments in bcc Fe₈₁Ni₁₉/Co superlattices](#)
 Author(s): Soroka IL, Bjorck M, Brucas R, et al.
 Source: PHYSICAL REVIEW B Volume: 72 Issue: 13 Article Number: 134409 Published: OCT 2005
 Times Cited: [1](#)
10. Title: [A study of the induced magnetism in the Au spacer layer of Co/Au/CoO exchange-bias trilayers and related systems](#)
 Author(s): Gierlings M, Prandolini MJ, Gruyters M, et al.
 Source: EUROPEAN PHYSICAL JOURNAL B Volume: 45 Issue: 1 Pages: 137-146 Published: MAY 2005
 Times Cited: [1](#)
11. Title: [Depth profile of spin and orbital magnetic moments in a subnanometer Pt film on Co](#)
 Author(s): Suzuki M, Muraoka H, Inaba Y, et al.
 Source: PHYSICAL REVIEW B Volume: 72 Issue: 5 Article Number: 054430 Published: AUG 2005
 Times Cited: [7](#)
12. Title: [Magnetic properties of ultrathin Ni/Pt\(111\) films; a surface magneto-optic Kerr effect study](#)
 Author(s): Nahm TU
 Conference Information: 2nd International Symposium on Advanced Photonics Science and Technology, AUG 21-24, 2004 Seoul, SOUTH KOREA
 Source: JOURNAL OF THE KOREAN PHYSICAL SOCIETY Volume: 46 Pages: S197-S200 Supplement: Suppl. 2 Published: JUN 2005
13. Title: [Magnetic properties of Ni/Pt multilayers](#)
 Author(s): Benkirane K, Elkabil R, Lassri M, et al.
 Source: MATERIALS SCIENCE AND ENGINEERING B-SOLID STATE MATERIALS FOR ADVANCED TECHNOLOGY Volume: 116 Issue: 1 Pages: 25-29 Published: JAN 15 2005

Nr citari:13

Punctaj=13x10=130

Total : 420

10. Participări la programe/granturi finanțate din sursă națională (se menționează și valoarea)

Formula de calcul: valoarea intrata in UBB in RON / 10.000

Nr. crt	Programul/Proiectul	Funcția	INSTITUTIA COORDONATOARE	Valoarea 2005- / Valoare intrata in UBB P=PUNCTAJ	Perioada de derulare	Membrii
1	CEEX Post-Doc 3203/2005 <i>Studiul materialelor prin masuratori magnetice si spectrometrie Mossbauer-</i>	Membru (director Prof. Dr V. Pop).	Universitatea Babes-Bolyai	204651 P=20.4	2005-2007	Pop Viorel Tunyagi Arthur Benea Diana
2	Contract CNCIS Tip A, cod 1318 <i>Studiul materialelor magnetice nanocompozite de tip dur/moale cuplate prin schimb</i>	Membru (director Prof. Dr V. Pop).	Universitatea Babes-Bolyai	188900 P=18.9	2006-2008	
3	Contract CEEX; 215-2/2006 <i>Materiale magnetice cu performanțe superioare utilizate în construcția mașinilor electrice</i>	Membru (director Prof. Dr V. Pop).	UNIVERSITATEA TRANSILVANIA BRASOV	249000 P=24.9	2006-2008	Pop Viorel Burzo Emil Coldea Marin Pop Aurel Deac Iosif-Grigore Tetean Romulus Andreica Daniel Benea Diana Tunyagi Arthur Dorolti Eugen Balasz Istvan
4	Contract CEEX 76-3/2006 <i>Metode computationale de inalta performanta in modelarea si proiectarea materialelor nanomagnetice</i>	Membru (director Prof. Dr V. Pop).	Institutul Național de Cercetare – Dezvoltare pentru Fizică Tehnică IFT Iași	147500 P=14.74	2006-2008	Pop Viorel Burzo Emil Coldea Marin Pop Aurel Deac Iosif-Grigore Tetean Romulus Andreica Daniel Benea Diana Tunyagi Arthur Dorolti Eugen Balasz Istvan Marconi Daniel
5	Contract CEEX 05-D11-32 <i>Magnetismul clusterilor in interactiune: procese fundamentale si aplicatii</i>	Membru Coordonator UBB: V. Pop	Institutul National de Cercetare Dezvoltare pentru Fizica Materialelor, Bucuresti-Magurele	225000 P=22.5	2006-2008	Pop Viorel Burzo Emil Coldea Marin Pop Aurel Deac Iosif-Grigore Tetean Romulus Andreica Daniel Tunyagi Arthur Balasz Istvan Benea Diana Dorolti Eugen Marconi Daniel
6	Proiect PNCDI II –71-119/18.09.2007 <i>Configuratii ordonate de nanoparticule feromagnetice si superparamagnetice</i>	Membru Coordonator UBB: V. Pop	Institutul National de Cercetare Dezvoltare pentru Tehnologii Izotopice si Moleculare Cluj-Napoca	400000/214540 P=21.45	2007 - 2010	Pop Viorel Burzo Emil Coldea Marin Deac Iosif-Grigore Tetean Romulus Benea Diana Tunyagi Arthur Dorolti Eugen Gutoiu Maria Simona Lupsa Marian Craciun Constantin Barbu-Tudoran Lucian Mihali Ciprian Barbu Alida Chis Aurel
7	Proiect PNCDI II 71-015/2007	Membru	Universitatea Tehnică din Cluj-Napoca	520000/282227	2007 - 2010	Pop Viorel Coldea Marin

	<i>Pulberi si materiale nanocristaline magnetice moi, pe baz de Fe si Ni, obtinute prin mecanosinteza. Preparare, proprietati, realizarea de comapcte nanocristaline pentru aplicatii</i>	<i>Coordonator UBB: V. Pop</i>		P=28.2		Pop Aurel Deac Iosif-Grigore Tetean Romulus Andreica Daniel Benea Diana Tunyagi Arthur Dorolti Eugen Gutoiu Maria Simona Lupsa Marian Bezergheanu Adrian Laslo Ancuta
8	Proiect PNCDI II 72-186/2008 <i>Materiale magnetice nanocompozite intarite prin schimb-NANOMAT</i>	Membru <i>Director V. Pop</i>	Universitatea Babes-Bolyai	580000/62967 P=6.2	2008 - 2011	Pop Viorel Burzo Emil Coldea Marin Deac Iosif-Grigore Tetean Romulus Andreica Daniel Benea Diana Tunyagi Arthur Dorolti Eugen Takacs Albert Gutoiu Simona Laslo Acuta
9	Proiect PNCDI II 22-098/2008 <i>Reducerea emisiilor de gaze cu efect de sera folosind catalizatori metalici suportati. Tehnologie de obtinere, preparare si caracterizare fizico-chimica - REGES</i>	Membru <i>Coordonator UBB: V. Pop</i>	Institutul National de Cercetare Dezvoltare pentru Tehnologii Izotopice si Moleculare Cluj-Napoca	200000/0 P=0	2008 - 2011	Pop Viorel Burzo Emil Coldea Marin Deac Iosif-Grigore Tetean Romulus Andreica Daniel Benea Diana Tunyagi Arthur Dorolti Eugen Takacs Abert Gutoiu Maria Simona Lupsa Marian Laslo Ancuta
10	Proiect PNCDI II 32-119/2008 <i>Tehnologia de obtinere, caracterizarea structurala si electronica a catalizatorilor metalici suportati cu aplicatii directe in protectia mediului - TOCSEM</i>	Membru <i>Coordonator UBB: V. Pop</i>	Institutul National de Cercetare Dezvoltare pentru Tehnologii Izotopice si Moleculare Cluj-Napoca	200000/10000 P=1	2008 - 2011	Pop Viorel Burzo Emil Coldea Marin Deac Iosif-Grigore Tetean Romulus Andreica Daniel Benea Diana Tunyagi Arthur Dorolti Eugen Takacs Abert Gutoiu Maria Simona Lupsa Marian Laslo Ancuta
11	CEEX nr. 2-CEX06-11-102/25.10.2006 "STUDIUL EFECTULUI MAGNETOCALORIC IN COMPUSI INTERMETALICI SI OXIDICI NANOSTRUCTURATI" (MAGCALEF) <i>Director R. Tetean</i>	Membru <i>Director R. Tetean</i>	Universitatea Babes-Bolyai Cluj-Napoca	1.500.000/900.000 P=90	2006-2008	
12	<u>CEEX 21</u> Dinamica si structura fluxului in supraconductori nanostructurati sau cvasi-bidimensionali (FLUXDIN) 2006	Membru <i>Coordonator UBB: I.G. Deac</i>	INCDFM Bucuresti	1.500.000/150.000 P=15		

12. Coordonări de programe/granturi finanțate din sursă națională (se menționează și valoarea)

Formula de calcul: $2x \text{ valoarea intrata in UBB in RON} / 10.000$

Nr. crt	Programul/Proiectul	Funcția	INSTITUTIA COORDONATOARE	Valoarea 2005- / Valoare intrata in UBB P=PUNCTAJ	Perioada de derulare
1	Contract CEEX-RP nr 5943 /18.09.2006 STUDIUL PROPRIETATILOR MAGNETICE ALE COMPUSILOR INTERMETALICI DE TIPUL RCO5- XMX (R=PAMANT RAR SAU TH, M=B, SI, AL). CALCULUL STRUCTURII ELECTRONICE DE BENZI	Director	Universitatea Babes-Bolyai	140.000 P=28	2006-2008

Total punctaj contracte: 291

TOTAL Criteriul II=90+420+291=801

III. Realizare remarcabilă 10% (aplicat la total punctaj Criteriul III)

(Descrieți într-o manieră cât mai accesibilă (în maximum 1 pagină) cea mai importantă realizare științifică/tehnică/artistică din ultimii 5 ani și impactul acesteia.)

În perioada 2004-2006 m-am implicat în descrierea proprietăților fundamentale ale solidelor magnetice folosind calculul structurii electronice de benzi. Ca și metoda de calcul pentru structura electronică de benzi am folosit în principal codul de calcul SPR-KKR dezvoltat de prof. Ebert la Universitatea din Muenchen.

Cea mai importantă contribuție a mea la elaborarea programului de calcul amintit s-a referit la descrierea proprietăților spectroscopice ale solidelor (profile Compton magnetice, spectre 2D-ACAR la anihilarea pozitronică) prin implementarea în codul de calcul menționat mai sus a rutinelor de calcul specifice lor.

Rezultatele au fost publicate în reviste prestigioase:

1. *A fully relativistic description of magnetic Compton profiles with an application to UFe_2* , D. Benea, S. Mankovsky and H. Ebert, Phys. Rev. B, **73** 094411 (2006).

Experimentele de împrăștiere Compton și respectiv anihilare pozitronică sunt relativ dificil de implementat și există puține centre care fac acest lucru (ex: grupul de la Univ. Bristol, care realizează experimente de anihilare pozitronică). Calcularea profilelor Compton și a celor 2D-ACAR reprezintă o metodă foarte utilă folosită pentru interpretarea spectrelor experimentale respective, pentru studierea diverselor efecte ce apar în structura electronică (corelații electronice, etc) și nu în ultimul rând pentru determinarea topologiei suprafeței Fermi a solidelor.

De exemplu, anihilarea pozitronică are o semnificație deosebită pentru compuşii 'half-metal' și există posibilitatea decelării gradului de polarizare a spinilor prin experimente de acest tip. Aceste experimente sunt totuși greu de realizat; de aceea determinarea teoretică a acestor spectre poate oferi informații importante (predicții) în legătura cu aspectele privind polarizarea de spini și corelațiile electronice în compuşii 'half-metal'.

Total punctaj = $0,6 \times (903.34) + 0,3 \times (801) + 0,1 \times (\text{total punctaj } \underline{\text{Criteriul III}})$

III)=782.3+0,1 x (total punctaj Criteriul III)

Data:

Semnătura:

Certific validitatea datelor prezentate

Sef de catedră,