

# CURRICULUM VITAE (Dr. Ivan Mančev)

## 1. Personal details

*First and last name:* Ivan Mančev

*Date and place of birth:* 31. January 1960., Dimitrovgrad, Serbia, Yugoslavia

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## 2. Education (institution, period of time and degree - title):

2.1 Department of Physics, Faculty of Philosophy, University of Niš, Niš, (undergraduate studies), 1978 - 1983, *Physicist*.

2.2 Faculty of Sciences - Belgrade, Department of Physics and Meteorology, Theoretical Atomic and Molecular Physics (graduate studies), 1986 - 1990, *Master of Physics*.  
Title of the Master Thesis (worked out under the supervision of Prof. Dž. Belkić):  
"Charge Exchange in Fast Collisions between Highly Charged Ions and Atoms", University of Belgrade, Faculty of Sciences (Belgrade, 1990.)

2.3 Faculty of Sciences - Belgrade, Department of Physics and Meteorology, Theoretical Atomic and Molecular Physics, 1994. *PhD*. Title of the PhD Thesis: (worked out under the supervision of Prof. Dž. Belkić): "Two - electron Transitions in Ion - Atom Collisions at Intermediate and High Energies", University of Belgrade, Faculty of Sciences (Belgrade, 1994.)

## 3. Employment history (period of time, title, institution):

2004. - Full Professor of Theoretical Physics, Department of Physics, University of Niš, Niš, Serbia

2000.-2004. Associate Professor, Department of Physics, University of Niš, Niš, Serbia

1994.-2000. Assistant Professor, Department of Physics, University of Niš, Niš, Serbia

1986.-1994. Assistant, Department of Physics, University of Niš, Niš, Serbia

1983.-1985. Gymnasium, Niš.

**4. Teaching experience** (institution, title, period of time):

4.1 Department of Physics, University of Niš, *Course:* Atomic Physics (undergraduate studies), Assistant, (1986 - 1994).

4.2 Department of Physics, University of Niš, *Course:* Quantum Theory (undergraduate studies), Assistant, (1990 - 1994).

4.3 Department of Physics, University of Niš, *Course:* General Physics (undergraduate studies), Assistant, (1986 - 1990).

4.4 Department of Physics, University of Niš, *Course:* Teaching of Methodology in Physics (undergraduate studies), Assistant, (1991 - 1994).

4.5 Department of Physics, University of Niš, *Course:* Mathematical Physics (undergraduate studies), Assistant Professor, (1994 - 2000).

4.6 Faculty of Science, Department of Physics, University of Priština, *Course:* Background of Mathematical Physics (undergraduate studies), Assistant Professor, (1995 - 1998).

4.7 Department of Physics, University of Niš, *Course:* Mathematical Physics II (undergraduate studies), Professor, (2000 - ).

4.8 Department of Physics, University of Niš, *Course:* Physics of Atoms and Molecules (undergraduate studies), Professor, (2000 - ).

4.9 Department of Physics, University of Niš, *Course:* Principles of quantum scattering theory (graduate studies), Professor, (2007 - ).

**5. National Research Projects** (title, financier, status, period):

5.1 ”*Theoretical Atomic and Molecular Physics*”, Republic Ministry of Science (Republic of Serbia), research member on the Project, (1990. - 1995.).

5.2 "Atomic and Molecular Physics", Republic Ministry of Science (Republic of Serbia), research member on the Project, (1996.- 2000.).

5.3 "Dynamics of atomic systems and their interaction with radiation", Republic Ministry of Science (Republic of Serbia), research member on the Project, (2001.-2005.).

5.4 "Dynamics of atomic, molecular and mesoscopic systems", Republic Ministry of Science (Republic of Serbia), research member on the Project, (2006.-2010.).

5.5 "Physics of collisions and photo processes in atomic, (bio)molecular and nano-sized systems ", Ministry of Education, Science and Technological Development, Republic of Serbia, Number: OI 171020; research member on the Project (2011.-2019.).

## 6. Editor-in-Chief of Scientific Journals (title, period):

6.1 Editor-in-Chief of **Facta Universitatis Series: Physics, Chemistry and Technology**.  
Publisher: University of Niš, (2000.-2011.)

### a. Articles in international journals

→ N. Milojević, **I. Mančev**, D. Delibašić, and Dž. Belkić, "Three-body boundary-corrected continuum-intermediate-state method for single charge exchange with the general transition amplitude ( $1s \rightarrow nlm$ ) applied to the p-H(1s),  $\alpha$ -H(1s), and p-He( $1s^2$ ) collisions with  $n \leq 4$ ", *Phys. Rev. A* **102**, 012816 (2020).

→ **I. Mančev**, N. Milojević, D. Delibašić, and Dž. Belkić, "Electron capture by fast projectiles from lithium, carbon, nitrogen, oxygen and neon", *Phys. Scr.* **95**, 065403 (2020).

→ **I. Mančev**, N. Milojević and Dž. Belkić, "State-selective and total cross sections for electron capture from the K-shell of multi-electron atoms by fully stripped projectiles",

- **I. Mančev**, *N. Milojević and Dž. Belkić*, "Electron capture by bare projectiles from multi-electron targets", *Eur. Phys. J. D* **72**, 209 (2018).
- *N. Milojević, I. Mančev, and Dž. Belkić*, "Boundary-corrected four-body continuum-intermediate-state method for charge exchange between hydrogenlike projectiles and atoms", *Phys. Rev. A* **96**, 032709 (2017).
- **I. Mančev**, *N. Milojević and Dž. Belkić* "Boundary-corrected four-body continuum-intermediate-state method: Single-electron capture from heliumlike atomic systems by fast nuclei", *Phys. Rev. A* **91**, 062705 (2015).
- **I. Mančev**, *N. Milojević and Dž. Belkić*, "Theoretical state-selective and total cross sections for electron capture from helium atoms by fully stripped ions", *Atomic Data and Nuclear Data Tables* **102**, Pages 6-41, (2015).
- **I. Mančev**, *N. Milojević and Dž. Belkić*, "Electron correlations in single-electron capture into any state of fast projectiles from heliumlike atomic systems", *Phys. Rev. A* **88**, 052706 (2013).
- **I. Mančev**, *N. Milojević and Dž. Belkić*, "Mutual neutralization in  $H^+ - H^-$  collisions by electron capture", *EPL (Europhysics Letters)* , **103**, 23001 (2013).
- **I. Mančev**, *N. Milojević and Dž. Belkić*, "State-Selective and Total Single-Capture Cross Sections for Fast Collisions of Multiply Charged Ions with Helium Atoms", *Few Body Systems*, **54**, 1889-1900, (2013).
- *Dž. Belkić, I. Mančev, and N. Milojević*, "Four-Body Theories for Transfer Ionization in Fast Ion-Atom Collisions", *Advances in Quantum Chemistry*, **65**, Pages 339-362 (2013).

- **I. Mančev**, N. Milojević and Dž. Belkić, "Four-body corrected first Born approximation for single-electron capture into arbitrary states of energetic projectiles ", *Phys. Rev. A* **86**, 022704 (2012 ).
- Dž. Belkić and **I. Mančev**, "Transfer ionization in fast ion-atom collisions: Four-body Born distorted-wave theory" *Phys. Rev. A* **83**, 012703 (2011).
- **I. Mančev** and N. Milojević, " Electron correlations in single-electron capture from helium by fast protons and alpha particles" *Phys. Rev. A*, 81, 022710 (2010).
- M. S. Schoffler, J. Tidze, L. Ph. H. Schmidt, T. Jahnke, N. Neumann, O. Jagutzki, H. Schmidt-Bocking, R. Dorner and **I. Mančev**, "State-selective differential cross sections for single and double electron capture in  $He^+$ ,  $He^{2+} - He$  and  $p - He$  collisions", *Phys. Rev. A*, **79**, 064701 (2009).
- Dž. Belkić, **I. Mančev**, and J. Hanssen " Four-body methods for high-energy ion-atom collisions " *Rev. Mod. Phys.* **80**, 249 (2008).
- **I. Mančev**, " Four-body continuum- distorted wave model for charge exchange between hydrogenlike projectiles and atoms " *Phys. Rev. A*, **75**, 052716 (2007)
- **I. Mančev**, " Single-electron capture from helium-like atomic systems by bare projectiles " *Europhysics Letters* **69**, 200 (2005).
- **I. Mančev**, " Continuum Distorted Wave - Born Initial State (CDW-BIS) model for single charge exchange " *J. Comp. Meth. Sci. Eng. (JCMSE)*, IOS Press, **5**, 73 (2005).
- **I. Mančev** " Single charge exchange in fast collision of alpha particles with helium " *J. Phys. B: At. Mol. Opt. Phys.*, **36**, 93 (2003).
- **I. Mančev**, V. Mergel and L. Schmidt " Electron capture from helium atoms by fast

- protons ” *J. Phys. B: At. Mol. Opt. Phys.*, **36**, 2733 (2003).
- **I. Mančev** ” *Single-electron capture and transfer ionization in collision of  $Li^{3+}$  ions with helium* ” *Phys. Rev. A*, **64**, 012708 (2001).
- **I. Mančev** ” *Electron Correlations in Single Capture from Helium-like Atomic Systems by Completely Stripped Projectiles* ” *Phys. Rev. A*, **60**, 351 (1999).
- **I. Mančev** ” *Transfer ionization in fast  $Li^{3+} - He$  collisions* ” *Nucl. Instr. Meth. Phys. Res. B*, **154**, 291 (1999).
- **I. Mančev** ” *Single - electron capture by hydrogen atoms and helium ions from helium atoms* ” *Phys. Rev. A*, **54**, 423 (1996).
- *Dž. Belkić*, **I. Mančev** and *V. Mergel* ” *Four - body model for transfer ionization in fast ion - atom collisions* ” *Phys. Rev. A*, **55**, 378 (1997).
- *Dž. Belkić*, **I. Mančev** and *V. Mergel* ” *Transfer ionization in energetic  $\alpha - He$  collisions*”, *Hyperfine Interactions*, **108**, 141 (1997).
- *Dž. Belkić*, *R. Gayet*, *J. Hanssen*, **I. Mančev** and *A. Nuñez* ” *Dynamic Electron Correlations in Single Capture from Helium by Fast Protons* ” *Phys. Rev. A*, **56**, 3675 (1997).
- **I. Mančev** ” *Four - Body Corrected First Born Approximation for Single Charge Exchange at High Impact Energies* ” *Physica Scripta*, **51**, 762 (1995).
- *Dž. Belkić*, **I. Mančev** and *M. Mudrinić* ” *Two - electron capture from helium by fast  $\alpha$  particles* ” *Phys. Rev. A*, **49**, 3646 (1994).
- *Dž. Belkić* and **I. Mančev** ” *Four-body CDW Approximation: Dependence of prior and post total cross sections for double charge exchange upon bound-state wave-*

functions ” *Physica Scripta*, **46**, 18 (1993).

→ Dž. Belkić and **I. Mančev** ”Formation of  $H^-$  by Double Charge Exchange in Fast Proton - Helium Collisions ” *Physica Scripta*, **45**, 35 (1992).

→ Dž. Belkić and **I. Mančev** ”Single Electron Capture from Carbon by Completely Stripped Projectiles” *Physica Scripta*, **42**, 285 (1990).

#### **b. Chapters in books**

→ Dž. Belkić, **I. Mančev** and N. Milojević, ”Critical Assessment of Theoretical Methods for Li Collisions with He at Intermediate and High Impact Energies”, in book: *Fast Ion-Atom and Ion-Molecule Collisions*, Pages 189- 230, Series *Interdisciplinary Research on Particle Collisions and Quantitative Spectroscopy*, Series Editor Dž. Belkić, 2012 World Scientific Publishing.

#### **c. Invited lectures/progress report at international conferences and symposiums**

→ **I. Mančev** ”Two electron transitions in fast ion atom collisions ” , Progress report, 18th Summer School and International Symposium on the Physics of Ionized Gases (SPIG), September 2nd - 6th 1996, Kotor, Yugoslavia, Contributed Papers and Abstract of Invited Lectures and Progress Reports, Faculty of Sciences, Institute of Physics, Novi Sad, Yugoslavia; (Editors: B Vujičić and S. Djurović p. 14)

#### **d. Contributed papers in international conference:**

→ D. Delibašić, N. Milojević and **I. Mančev**, ’Single-Electron Capture in  $p - He^+$  Collisions.” in *Book of Contributed Papers*, 30<sup>th</sup> Summer School and International Symposium on the Physics of Ionized Gases, v Sabac, Serbia, August 24 -28, 2020, Editors: Luka C. Popovic, Dusko Borka, Dragana Ilic and Vladimir Sreckovic, Page 71-75

→ **I. Mančev** and N. Milojević, ”Charge Exchange in Fast p-O Collisions.” *The 10th Ju-*

bilee Conference of the Balkan Physical Union (BPU10), 26-30 August 2018 Sofia, Bulgaria, *AIP Conference Proceedings* 2075, 050007 (2019); Editors: Todor M. Mishonov and Albert M. Varonov, ISBN: 978-0-7354-1803-5, <https://doi.org/10.1063/1.5091175>

- N. Milojević and **I. Mančev**, "Single Electron Capture in  $H^+N$  Collisions." in *Book of Contributed Papers, 29<sup>th</sup> Summer School and International Symposium on the Physics of Ionized Gases, Aug. 29 - Sep. 2, 2018, Belgrade, Serbia*, in *CONTRIBUTED PAPERS*, Page 43-47, Editors Goran Poparić, Bratislav Obradović, Duško Borka and Milan Rajković.
  
- **I. Mančev** and N. Milojević, "Projectile angular distribution in single electron capture from helium by protons" in *Book of Contributed Papers, 28<sup>th</sup> Summer School and International Symposium on the Physics of Ionized Gases, Aug. 29 - Sep. 2, 2016, Belgrade, Serbia*, in *CONTRIBUTED PAPERS*, Page 79-83, Editors D. Marić, A. Milosavljević B. Obradović and G. Poparić.
  
- N. Milojević and **I. Mančev** "Thomas peak in fast  $H^+ - He$  collisions" in *Book of Contributed Papers, 28<sup>th</sup> Summer School and International Symposium on the Physics of Ionized Gases, Aug. 29 - Sep. 2, 2016, Belgrade, Serbia*, in *CONTRIBUTED PAPERS*, Page 83-87, Editors D. Marić, A. Milosavljević B. Obradović and G. Poparić.
  
- **I. Mančev** and N. Milojević, "Single electron capture in  $p - Li^+$  collisions " in *Book of Contributed Papers, 27<sup>th</sup> Summer School and International Symposium on the Physics of Ionized Gases, August, 26 - 29, 2014, Belgrade, Serbia*, in *CONTRIBUTED PAPERS*, Page 98-102, Editors D. Marić, A. Milosavljević and Z. Mijatović.
  
- **I. Mančev** and N. Milojević, "Charge exchange in fast  $Li^{3+}$ -He collisions " in *Book of Contributed Papers, 26<sup>th</sup> Summer School and International Symposium on the Physics of Ionized Gases, August, 27 - 31, 2012, Zrenjanin, Serbia*, in *CONTRIBUTED PAPERS*, Page 19-22, Editors M. Kuraica, Z. Mijatović.



- **I. Mančev** "Charge Transfer In Energetic  $Li^{2+} - H$  Collisions", 24TH SUMMER SCHOOL AND INTERNATIONAL SYMPOSIUM ON THE PHYSICS OF IONIZED GASES, CONTRIBUTED PAPERS [Novi Sad, Date: Aug. 25-29, 2008.] Book Series: PUBLICATIONS OF THE ASTRONOMICAL OBSERVATORY OF BELGRADE-SERIES Issue: 84 Pages: 79-82 Published: 2008. Editor(s): G. Malovic, L.C. Popovic, and M.S. Dimitrijevic.
- M. S. Schoffler, J. Tidze, L. Ph. H. Schmidt, T. Jahnke, N. Neumann, O. Jagutzki, H. Schmidt-Bocking, R. Dorner and **I. Mančev**, "State-selective differential cross sections for single electron capture in  $H^+$ ,  $He^+$  and  $He^{2+}$  collisions with  $He$ ", 9th European Conference on Atoms Molecules & Photons (ECAMP), 6-11th May 2007., Heraklion, Crete, Greece. (Session: Few body dynamics).
- **I. Mančev** "Charge exchange in fast collisions of lithium ion with helium", XXIII International Conference on Photonic, Electronic and Atomic Collisions (ICPEAC 2003), July 23-29, Stockholm, Sweden, Abstract of Contributed paper, Eds. J. Anton et al, We151.
- **I. Mančev** "Single electron capture in fast collisions of lithium ion with helium" in Book of Contributed Papers, BPU-5: Fifth General Conference of the Balkan Physical Union, August 25-29, 2003, Vrnjačka Banja, Serbia and Montenegro, SP04-008
- **I. Mančev** "Differential cross sections for proton-helium scattering" in Book of Contributed Papers, 21<sup>st</sup> Summer School and International Symposium on the Physics of Ionized Gases, 2002, Sokobanja, Yugoslavia. (Edited by M. Radović and M. Jovanović) p. 84
- **I. Mančev** "Transfer ionization in fast  $Li^{3+} - He$ ", 7th Workshop on Fast Ion-Atom Collisions, 9-11 September 1998, Debrecen, Hungary. In Book of Abstracts pp.48
- Dž. Belkić, R. Gayet, J. Hanssen, **I. Mančev** and A. Nuñez "Correlations electron-

iques dynamiques dans la capture d'un seul electron de l'helium par des protons rapides", *Dynamique des Ions des Atomes et des Molecules (DIAM '98)*, Reims, France, July 8-10, (1998), Tome 2, p. 105

→ **I. Mančev** "Single charge exchange in fast hydrogen-helium collisions " in *Book of Contributed Papers, 19<sup>th</sup> Summer School and International Symposium on the Physics of Ionized Gases, 1998, Zlatibor, Yugoslavia. (Edited by N.Konjević, M. Ćuk and I. Videnović) p.151*

→ **I. Mančev**, "Single electron capture from  $Li^+$  ions by protons, 3<sup>rd</sup> General Conference of the Balkan Physical Union, September 1997, Cluj-Napoca, Romania, Published in the journal: *Balkan Physics Letters, Vol. 5, part one, p.139 (1997).*

→ **I. Mančev** and M. Mudrinić "Formation of  $H^-$  in Fast H - H Collisions " in *Book of Contributed Papers, 17<sup>th</sup> Summer School and International Symposium on the Physics of Ionized Gases, Belgrade, 1994. (Edited by B.Marinković and Z.Petrović) p.55*

#### e. Articles in national journals:

→ N. Milojević and **I. Mančev**, "SINGLE ELECTRON CAPTURE INTO ARBITRARY STATES OF BARE PROJECTILES FROM MULTI-ELECTRON TARGETS" , *FACTA UNIVERSITATIS Series: Physics, Chemistry and Technology Vol. 16, No 2, 2018, pp. 239 - 247 <https://doi.org/10.2298/FUPCT1802239M>*

→ **I. Mančev** "Four-body one channel Distorted-wave Theories for Single Electron Transfer " *Facta Universitatis Ser. Physics, Chemistry and Technology* **2**, 309 (2003).

→ **I. Mančev** "Angular - differential cross section for single electron capture to  $H(2p)$  in proton - helium collisions" *Facta Universitatis Ser. Physics, Chemistry and Technology* **1**, 51 (1994).

- **I. Mančev** "Comparative study of the first and second - order approximations in the theory of charge exchange " Zbornik radova Filozofskog fakulteta, Serija fizika **1**, 67 (1990).
- **M. Nikolić and I. Mančev** "Calculation of the static potential for the arbitrary states of the hydrogen atom" Zbornik radova Filozofskog fakulteta, Serija fizika i hemija **2**, 11 (1989).

**f. Contributed papers in national conference:**

- **I. Mančev, N. Milojević,** " Neutralizacija jona  $H^-$  u sudarima sa protonima " XII Kongres fizičara Srbije, Vrnjačka Banja, 28. april - 2. maj 2013, p.300
- **I. Mančev** "Diferencijalni preseki za jednostruki zahvat elektrona " Kongres fizičara Srbije i Crne Gore, Petrovac na Moru, June 2004, p.59
- **I. Mančev** "Elektronske korelacije u procesu zahvata elektrona iz helijumu sličnih atoma " X Kongres fizičara Jugoslavije, Vrnjačka Banja, March 2000, p.75
- **I. Mančev** "Izmene naelektrisanja u brzim sudarima  $He^+$  jona sa atomima helijuma " IX Kongres fizičara Jugoslavije, Petrovac na Moru, May 1995, p.81

**g. Books:**

- **I. Mančev** "Quantum Theory of Fast Ion-Atom Collisions ", Niš, 2004. (in Serbian)
- **I. Mančev** "Problems in Atomic Physics ", Niš, 2001. (in Serbian)
- **M. Nikolić, I. Mančev, A. Tančić** "Problems in Quantum Mechanics ", Niš, 1997. (in Serbian)

**i. Awards and distinctions in physics**

- i.1. 2009 - present, Member of the Scientific Committee of the International Symposium on Physics of Ionized Gases (SPIG).
- i.2. 2013 Member of the Scientific Committee of the 12th Congress of Serbian Physicists.
- i.3. 2006 - present, Member of The Scientific Board for Physics, Ministry of Education, Science and Technological Development, Republic of Serbia.
- i.4. Publication in *Rev. Mod. Phys.* Impact factor 34, world's most cited scientific journal in physics