Volodymyr Savchenko

April 22, 2022

https://www.volodymyrsavchenko.com/files/cv.pdf

EPFL SCITAS
ME B2 464 (Bâtiment ME)
Station 9
CH-1015 Lausanne

Phone: (+41) 21 693 19 41
Email: Volodymyr.Savchenko@epfl.ch
Homepage: https://volodymyrsavchenko.com
ORCID: https://orcid.org/0000-0001-6353-0808
GitHub: https://github.com/volodymyrss
LinkedIn https://www.linkedin.com/in/v-savchenko

Personal

Born on October 14, 1985 in Kyiv

Citizen of Ukraine.

Employment

2022-02 - now	Data Scientist at EPFL, supporting CTA Off-site Data Center activities.
2017-01 - now	Post-doctoral researcher at ISDC, Departement of Astronomy, University of Geneva. Responsible for INTEGRAL in-flight calibration at ISDC, leading the multi-messenger follow-up activities with INTEGRAL, culminating in several ground-breaking publications. Deeply involved in developing innovative approaches for preservation and improved reusability of astrophysical data and software, primarily in cloud-native web-based data-analysis workflows. [a]
2013-12 - 2016-12	Post-doctoral researcher, INTEGRAL/ISGRI instrument team member, François Arago Centre, APC, Université Paris Diderot. Responsible for modelling response of hard X-ray detector ISGRI, leveraging grid and cloud infrastructures for deploying flexible analysis frameworks and software preservation. Involved in pioneering multi-messenger studies, with INTEGRAL.
2012-05 - 2012-12	Post-doctoral researcher at ISDC Data Centre, Observatory of Geneva, Switzerland, involved in INTEGRAL operations.
2006-09 - 2007-12	Engineer, Bogolyubov Institute for theoretical physics, Kyiv, Ukraine. Pioneering Ukrainian national Grid infrastructure - contribution to the growing needs of high-energy physics experiments. Explored possibilities of Grid for astrophysical applications, supporting and developing computing resources of Swiss-Ukrainian virtual observatory project.

Education

2008-01 - 2012-04	Ph.D. *mention astronomie et astrophysique*, University of Geneva. Thesis "Gamma-ray bursts" focused on observational and theoretical aspects of this phenomenon. Research touched a variety of other topics: pulsars, dark matter, object classification. Took part in INTEGRAL spacecraft operations, improving of data reduction accuracy instrument. Created web service for rapid distribution of the data. This service is still widely used by the community.
2002-09 - 2007-07	M.Sc. Particle and nuclear physics, Kyiv Taras Schevchenko National University, including advanced courses and schools in theoretical, particle and astroparticle physics at Bogolyubov Institute for theoretical physics (Kyiv)

[a] https://www.astro.unige.ch/mmoda/, https://github.com/oda-hub/

Experience

Languages

Ukrainian, Russian	native
English	professional proficiency
French	intermediate

Student supervision

2013 - 2021 I co-supervised 5 master students in Paris University and University of Geneva

Selected organizational roles

Since 2015	I co-lead organization of a large collaboration[a] leveraging multi-messenger observations with INTEGRAL telescope. Organized multiple meetings, developed web site (including web-based data analysis services).
Since 2020	Expert in UNIGE Data Science Competence Center [b]
Since 2020	Maintaining MMODA Open-Source framework for web-bases astrophysical analysis [c]
Since 2020	Contributing to major open astrophysical software frameworks astropy and astroquery [d].

[a] https://www.astro.unige.ch/cdci/integral-multimessenger-collaboration
[b] https://datascience.unige.ch/en/experts-network/volodymyr-savchenko
[c] https://github.com/oda-hub/
[d] https://github.com/astropy/astroquery, https://github.com/astropy/astropy, https://github.com/astropy/astropy-v5.0-paper/

Meeting organization

January 2022	"Compact-Object Astrophysics in the Era of Multi-Messenger Astronomy" Sass-Fee School [a]
January 2019	"12th INTEGRAL Conference and 1st AHEAD Gamma-Ray Workshop" [b]
December 2015	"Distributed Computing in Astrophysics" workshop at APC/FACe"[c].
2014	the GRB Paris group organized a workshop "Gamma-Ray Bursts in the Multi-messenger Era"[d].
2012 – 2014	lead an effort to bootstrap a group of researchers from Paris region interested in the GRB science, organized and chaired regular meetings.

[a] https://www.astro.unige.ch/saasfee2022/
[b] https://www.astro.unige.ch/integral2019/conference-home-page
[c] https://indico.in2p3.fr/event/12042/
[d] https://indico.in2p3.fr/event/9603/

Awards

2017 Mikhail G. Revnivtsev Prize, by ESA/INTEGRAL, IKI and INAF.
2018 Zeldovich Medal, by COSPAR and RAS.

Statement of major scientific achievements

I have well-established experience in high-energy astrophysics, especially observations and modeling of short and energetic transients.

I demonstrated an ability to deeply understand the physics of detectors, a clear view of the scientific goals and outstanding technical abilities are key assets in X-ray follow-ups of multi-messenger transients. Since the last years of my PhD, I pursued focused effort to complete a deep instrumental study of all-sky GRB detection with INTEGRAL, a project which did not seem most exciting at that point. I have put strong effort on **establishing interoperability standards and services, to promote open re-use of the INTEGRAL data**, which lead to the involvement in a collaboration managing a network of GRB detectors, the IPN.

Upon moving to exceptionally dynamic environment of the APC laboratory at University Paris 7, I realized the potential of my work in application to the Gravitational Wave observations, and started to collaborate with Virgo gravitational detector teams at the APC/Paris. I was also responsible for the low-energy response model of INTEGRAL/IBIS instrument, arguably the second most useful instrument in multi-messenger follow-ups with INTEGRAL.

I conceived and lead the project searching for gamma-ray counterpart of a gravitational wave event with INTEGRAL. After years of exploring and uncertainty, the project culminated in INTEGRAL discovery of first ever electromagnetic counterpart of a gravitational-wave event. In order to achieve this result, I made essential organizational efforts, in particular I made a central contribution in the organization, implementation and promotion of a large international scientific collaboration dedicated to the X-ray multi-messenger follow-ups using the INTEGRAL telescope, and subsequently frequently represented the collaboration in inter-institutional activities and scientific conferences.

I represent INTEGRAL in various other collaborative activities and publications, such as observations of the multi-messenger observations of the first neutrino source.

I have introduced pioneered searches for sources of mysterious Fast Radio Bursts with INTEGRAL, and In 2020, I **co-lead a paper reporting detection of the first detection of multi-wavelength signal from an FRB**, revealing the origin of at least some of these mysterious events.

I have been always interested in **pushing the boundaries of application of open and FAIR machine intelligence technologies in scientific research**. I have developed and contributed to development of a sequence of open frameworks an platforms for "live" data and knowledge management[1]. In particular, I applied these innovative technologies to the multi-messenger transients follow-up.
I have demonstrated excellent command of a broad range of computing technologies, as well as a strong commitment to open data and reusability methodology.

[1] E.g. https://www.astro.unige.ch/mmoda/, https://github.com/oda-hub/, and https://linked-open-data.space/

Selected Journal Articles

1. INTEGRAL Detection of the First Prompt Gamma-Ray Signal Coincident with the Gravitational-wave Event GW170817
***Savchenko, V.**; Ferrigno, C.; Kuulkers, E.; Bazzano, A.; Bozzo, E.; Brandt, S.; Chenevez, J.; Courvoisier, T. J.-L.; Diehl, R.; Domingo, A.; Hanlon, L.; Jourdain, E.; von Kienlin, A.; Laurent, P.; Lebrun, F.; Lutovinov, A.; Martin-Carrillo, A.; Mereghetti, S.; Natalucci, L.; Rodi, J.; Roques, J.-P.; Sunyaev, R.; Ubertini, P.*
2017, ApJ 848L/15S

2. Gravitational Waves and Gamma-rays from a Binary Neutron Star Merger: GW170817 and GRB 170817A
LIGO Scientific Collaboration, Virgo Collaboration, Fermi Gamma-Ray Burst Monitor, INTEGRAL
2017, ApJ, 848L/13A

3. An online data analysis system of INTEGRAL telescope
*A. Neronov; **V. Savchenko**; A. Tramacere, M. Meharga, C. Ferrigno, S.Paltani*
2021, A&A, 651/A97

4. INTEGRAL Discovery of a Burst with Associated Radio Emission from the Magnetar SGR 1935+2154
*Mereghetti, S.; **Savchenko, V.**; Ferrigno, C.; Götz, D.; Rigoselli, M.; Tiengo, A.; Bazzano, A.; Bozzo, E.; Coleiro, A.; Courvoisier, T. J. -L.; Doyle, M.; Goldwurm, A.; Hanlon, L.; Jourdain, E.; von Kienlin, A.; Lutovinov, A.; Martin-Carrillo, A.; Molkov, S.; Natalucci, L.; Onori, F. Panessa, F.; Rodi, J.; Rodriguez, J.; Sánchez-Fernández, C.; Sunyaev, R.; Ubertini, P.*
2020, ApJL, 898/2, L29

5. Identification of a Local Sample of Gamma-Ray Bursts Consistent with a Magnetar Giant Flare Origin
*Burns, E.; Svinkin, D.; Hurley, K.; Wadiasingh, Z.; Negro, M.; Younes, G.; Hamburg, R.; Ridnaia, A.; Cook, D.; Cenko, S. B.; Aloisi, R.; Ashton, G.; Baring, M.; Briggs, M. S.; Christensen, N.; Frederiks, D.; Goldstein, A.; Hui, C. M.; Kaplan, D. L.; Kasliwal, M. M. Kocevski, D.; Roberts, O. J.; **Savchenko, V.**; Tohuvavohu, A.; Veres, P.; Wilson-Hodge, C. A.*
2021, ApJL 907/2, id.L28

Press releases

1. The paper "INTEGRAL Upper Limits on Gamma-Ray Emission Associated with the Gravitational Wave Event GW150914" was featured in ESA press release on 30 March 2016, as well as press releases of multiple other institutions, including UNIGE.

2. The paper "INTEGRAL Detection of the First Prompt Gamma-Ray Signal Coincident with the Gravitational-wave Event GW170817" was featured in ESA press release on 16 October 2017 as well as press releases of multiple other institutions, including UNIGE..

3. The paper "INTEGRAL IBIS and SPI-ACS detection of a hard X-ray counterpart of the radio burst from SGR 1935+2154" was featured in ESA press release on 16 October 2020.

4. As well as multiple other, more limited, media communications, most recently about our contribution to the paper "Identification of a Local Sample of Gamma-Ray Bursts Consistent with a Magnetar Giant Flare Origin" were featured by UNIGE press office on 13 January 2021.