Róbert Szabó

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R. Szabó is a world-renown expert of pulsating variable stars. He made significant contribution to the field both from the theoretical and from the observational sides. He worked in or visited several leading institutes in the world, namely **University of Florida**, where he conducted numerical modeling of pulsating stars as a postdoc, **Kavli Institute at the University of Santa Barbara, MIT, Harvard Center for Astrophysics**, and Sydney University, where he worked on asteroseismology and collaborated with the teams of space photometric missions. He is a leading figure in his field, he worked with the data of and preparation for several space photometric missions (MOST, CoRoT, Kepler/K2, TESS, PLATO), resulting in several successful observing proposals and high-profile publications. This is demonstrated by his leadership of international RR Lyrae and Cepheid Working Groups consisting of 25-50 researchers in the Kepler, K2 and TESS missions. He founded and led the Hungarian Kepler group in Konkoly Observatory. **Róbert Szabó initiated the K2 RR Lyrae Survey** which observes 5000 RR Lyrae stars and hundreds of Cepheids throughout the Ecliptic, creating a unique dataset, never seen before. His expertise is acknowledged by his **Steering Committee** membership in the Kepler and TESS Asteroseismic Science Consortia, and by **Board membership** of the planet-hunting and asteroseismology M3 Mission, PLATO of the European Space Agency, and as a member of the K2 Users' Panel. He is an SDSS External Collaborator and a member of WEAVE collaboration. Dr. Szabó has was the PI of three national research grants (KTIA, OTKA, NKFIH). He organized two international conferences as SOC chair: the 5th Kepler Asteroseismic Science Consortium conference in Balatonalmádi in 2012, and an RR Lyrae conference in Visegrád in 2015, which became the first of a series of international biannual conferences on classical pulsating variable stars (2017: Niepolomice, Poland, 2019: Cloudcroft, NM, USA, 2022: La Palma, Canary Islands, Spain). Róbert Szabó has a broad range of interests. Besides **photometry, space missions and pulsating stars, he worked on eclipsing binaries, exoplanets, stellar activity, asteroseismology, Solar System objects as well as transient astrophysical objects, like supernovae.** His expertise in different fields and leadership skills make him an excellent candidate to lead Konkoly Observatory into a new era of astronomy, namely the big data realm and the age of synoptic sky surveys and near-field cosmology. Pulsating variable stars are at the crossroads of several astrophysical domains from stellar astrophysics to galactic populations and cosmology. Being an expert in high-precision photometry and dynamical phenomena of classical pulsating stars, R. Szabó has started to work on near-field cosmology and classification problems to apply his knowledge to use these benchmark objects as tracers of the history of Galactic formation and evolution. In 2018 He won the prestigious **Lendület grant** from the Hungarian Academy of Sciences making possible to elevate the astrophysical research pursued by him to a new level in terms of excellent science, cutting-edge research problems tackled, international collaborations built, synergies within the institute, and the promise of new generations of scientists raised in Hungary. He is a member of several **LSST science working groups related to this proposal (Stars, Milky Way and the Local Volume, Transients and Variable Stars, Pulsating stars, Classification).** He is the **leader of** the Hungarian in-kind contribution team to Vera Rubin Observatory's **Legacy Survey of Space and time.**

Positions

2019 –	**director,** Research Centre for Astronomy Earth Sciences (ELKH CSFK), Konkoly Observatory, Budapest, Hungary
2017 –	**research advisor,** Research Centre for Astronomy Earth Sciences (MTA CSFK), Konkoly Observatory, Budapest, Hungary
2016 –	**deputy director,** Konkoly Observatory, MTA CSFK, Budapest, Hungary
2012 – 2017	**senior research fellow,** Konkoly Observatory, Budapest, Hungary
2007 – 2012	**research fellow,** Konkoly Observatory, Budapest, Hungary
2005 – 2007	**postdoctoral fellow,** Physics Department, Univ. of Florida, USA
2001 – 2005	**research fellow,** Konkoly Observatory, Budapest, Hungary
1998 – 2001	**junior research fellow,** Konkoly Observatory, Budapest, Hungary

Education and degrees

2017	**DSc** (Doctor of Sciences), Hungarian Academy of Sciences
2008	**Communication of Science and Management of Research** training, Hungarian Academy of Sciences, Budapest, Hungary
2004	**PhD,** Astronomy and Particle Physics, Doctoral School, Eötvös Loránd Univ., Budapest, Hungary
1993-1999	**Master (Astronomy, Mathematics and Physics)** Astronomy Department, Eötvös Loránd University, Budapest, Hungary

Fellowships and awards

2018	**Physics Award**, Physics Section of the Hungarian Academy of Sciences
2018	**Researcher of the Year,** Regional Centre of the Hung. Acad. of Sciences VEAB
2018	**Lendület grant**, Hungarian Academy of Sciences
2017, 2018	**Excellent researcher**, MTA CSFK
2015	**Bronze medallion**, Regional Centre of the Hungarian Acad. of Sciences VEAB
2015	**Bolyai plaquette,** Advisory Board of the Bolyai János Research Fellowship
2012	**International Research Collaboration Award**, University of Sydney, Australia
2011 –2014	**János Bolyai Research Scholarship** of the Hungarian Academy of Sciences
2011	**Young Researcher Award** of the Hungarian Academy of Sciences
2006	**Hungarian State Eötvös Fellowship**
1998 –2001	**Young Researcher Fellowship,** Konkoly Observatory, Budapest, Hungary

Organisation of scientific meetings

Apr 2023	International Astronomical Union Symposium No. 376. ***At the cross-roads of astrophysics and cosmology: Period–luminosity relations in the 2020s*** and related spring school **SOC and LOC member**
Sept 2022	RRL/CEP2022 ***Large-scale surveys as bridges between spectroscopy and photometry***, conference, La Palma, Spain, **SOC member**
Jul 2022	*Asteroseismology in the Era of Surveys from Space and the Ground: Stars, Planets, and the Milky Way* TASC6/KASC13 conference, Leuven, Belgium **SOC member**
June 2022	EAS2022 – European Astronomical Society konferencia Valencia, Spain, **SOC member**

Oct 2021	MW-Gaia COST Action, *Star Clusters: the Gaia Revolution*, Barcelona/virtual **SOC members**
Jun 2021	EAS2021 – European Astronomical Society, Leiden/virtual conference, **SOC member** 2400+ participants
Oct 2020	ARIEL Consortium meeting, Budapest/virtual, **main organizer**
Oct 2019	RRL2019: *Frontiers of Classical Pulsators: Theory and Observations*, Cloudcroft, NM, USA, **SOC member**
Sep 2017	RRL2017: *Revival of the classical pulsators: from Galactic Structure to Stellar Interior Diagnostics conference*, Niepolomice, Poland, 77 participants **SOC Member**
Jun 2017	*TESSting Stellar Astrophysics* KASC10/TASC3 konferencia Birmingham, UK, 164 participants, **SOC member**
Aug 2016	*XII. Torino workshop and the IV. CSFK Astromineralogy workshop,* Budapest, Hungary, 73 participants, **SOC member**
Oct 2015	RRL2015: *High-precision studies of RR Lyrae stars: from dynamical phenomena to mapping galactic structure* Visegrád, Hungary, 70 participants, **LOC chair, SOC chair**
Jun 2013	Sixth Kepler Asteroseismic Science Consortium Conference, *A New Era in Stellar Astrophysics with Kepler*, Sydney, Australia, 105 participants, **SOC member**
Jun 2012	Fifth Kepler Asteroseismic Science Consortium Conference, *Extending the Kepler mission: New Horizons in Asteroseismology,* Balatonalmádi, Hungary, 120 participants, **LOC chair, SOC member**
Jul 2011	Fourth Kepler Asteroseismic Science Consortium Conference, *From Unprecedented Data to Revolutionary Science*, Boulder CO, USA, 100 participants, **SOC member**
Jun 2010	Third Kepler Asteroseismic Science Consortium Conference, *Kepler Asteroseismology in Action*, Aarhus, Denmark, 150 participants, **SOC member**

Institutional responsibilities

2016 – 2019	**Integrated risk manager**, MTA CSFK, Budapest, Hungary
2016 – 2019	**Scientific secretary**, MTA CSFK, Budapest, Hungary
2010 – 2013	**Organizer of the Konkoly Observatory Seminar Series,** Konkoly Observatory, Budapest, Hungary
2010	**Scientific Secretary,** Konkoly Observatory, Budapest, Hungary

Services

2022 – 2025	**Elected non-academician member** of the Hungarian Academy of Sciences General Assembly
2021 –	**member,** IAU Financial Committee
2021 –	**president,** IAU Div G, Commission G4 Pulsating stars
2018 – 2021	**acting president**, IAU Div D Commission G4 Pulsating stars
2018 –	**Auxiliary member**, Doctoral Committee of the Physics Section
2017 –	**Hungarian representative**, ESON – European Southern Observatory Outreach Network
2016 – 2019	**Elected non-academician member** of the Hungarian Academy of Sciences General Assembly
2016 –	**Member**, K2 Users' Panel
2014 –	**Member**, Astronomy and Space Physics Scientific Committee, Hungarian Acad.

of Sciences
2015 – **Member**, TASC Steering Committee
2012 – 2013 **IBVS** Editor in chief, Konkoly Observatory, Hungary
2012 – Member of the **IBVS** Editorial Board (Information Bulletin on Variable Stars)
2010 – **Member,** PLATO (ESA M3 space mission) Board
2008 – **Member,** KASC Steering Committee

Working group leadership and membership

2020 – 2022 **LSST** Transients and Variable Stars and Stars Classification and Characterization subgroup lead
2018 – **ARIEL** Co-I (ESA M4 space mission)
2017 – **LSST** member Transients and Variable Stars and Stars, Milky Way & Local Volume Science Collaborations
2017 – **WEAVE** member Galactic Archeology (GA) and Stellar, Circumstellar and Interstellar Physics (SCIP) Working Groups
2016 – **SDSS** External collaborator, RR Lyrae stars
2016 – **Leader of the SPEX research group** (Stellar Pulsations, Space Photometry, Exoplanets), Konkoly Observatory, Hungary
2015 – **TASC** (TESS Asteroseismic Science Consortium) **Working Group leader** WG#6 RR Lyrae stars and Cepheids
2007 – 2012 **KASC Working Group leader** WG#7 Cepheids**,** KASC WG#13 RR Lyrae stars - theoretical modeling **subgroup chair**
2007 – 2016 **Founder and leader of the KIK research group** (Kepler Investigations in Konkoly Observatory), Hungary

Peer-review services

2022 – **reviewer**, NASA TESS Guest Investigator panel
2022 – **reviewer,** Croatian Science Foundation
2021 – **reviewer**, Opticon (telescope time proposals)
2020 – **reviewer,** PLATO PSM dicuments
2020 – **reviewer**, ESO OPC (telescope time proposals)
2019 – **reviewer**, ERC (Starting, Consolidator Grants)
2019 – **reviewer**, habilitation for professorship, EKE
2019 – **reviewer**, chilei Fondecyt science funding agency
2018 – **Co-operative international proposals panel member**, Hungarian National Research, Development and Innovation Office (NKFIH)
2017 – **Reviewer**, Lendület program of the Hungarian Academy of Sciences
2016 – **Physics panel member**, Hungarian National Research, Development and Innovation Office (NKFIH)
2016 – **Reviewer**, NASA Postdoctoral Program (NPP)
2016 **PhD opponent**, (Andrea Nagy) University of Szeged, Hungary
2014 – **Reviewer,** Austrian Science Fund (FWF)
2014 – **Reviewer,** Slovenian Research Agency (ARRS)
2013 – **Evaluator,** SCIEX Swiss postdoctoral fellowship proposals
2013 **PhD opponent,** (Tamás Szalai) University of Szeged, Hungary
2012 – **Reviewer,** Polish National Science Center research fund
2007 – **Reviewer,** Hungarian Scientific Research Fund (OTKA)

2005 – **Regular referee**: Nature Astronomy, Astronomy & Astrophysics, Astrophysical Journal, Astrophysical Journal Letters, Astrophysical Journal Supplement Series, Astrophysics and Space Science, Monthly Notices of the RAS, Astronomische Nachrichten, New Astronomy, Open Astronomy, IBVS, The Observatory

Supervision of graduate students

2022 – Szilárd Kálmán Co-operative Doctoral Program in National Defense, *Photometric investigations of exoplanetary systems,* **expert**
2021 – Eugenio D'Intino *Application of machine learning applications in astronomy* **co-supervisor**
2019 – Gábor Kovács *Multi-dimensional hydrodynamical modelling of stellar pulsation*
2018 – Forró Adrienn, graduate student, Pulsating stars in space photometric missions, **supervisor**
2017 – 2018 Áron Juhász, graduate student, *RR Lyrae stars in the K2, Pan-STARRS and Gaia missions*, Konkoly Observatory, Budapest, Hungary, **supervisor**
2013 – 2015 Emese Plachy, graduate student, *Investigating chaotic dynamics in variable stars*, Konkoly Observatory, Budapest, Hungary, **co-supervisor**
2011 – 2014 László Molnár, graduate student, *Dynamical phenomena in RR Lyrae stars*, Konkoly Observatory, Budapest, Hungary, **co-supervisor**

Supervision of undergraduate students

2019 Gábor Kovács, OTDK, Stellar pulsation from 1- to 3D, honorable mention
2018 – Gábor Kovács, MSc, *Numerical modelling stellar pulsation in multi dimensions,* ELTE
2018 Pál Szabó, BSc, *K2 and TESS photometry of pulsating variable stars*
2017 Martin Sallai, Konkoly Observatory demonstrator program, *Photometry of Boyajian's star from Piszkés-tető*, ELTE University, Budapest
2017 Gábor Kovács, Konkoly Observatory demonstrator program, *Numerical methods*, ELTE University, Budapest
2017 Dóra Pintér, BSc thesis, *Eclipsing binaries in the Kepler pixel data*, ELTE University, Budapest
2016 Attila Pazsin, BSc thesis, *Long period planets in the Kepler sample*, ELTE University, Budapest
2016 Ádám Boldog, BSc thesis, *Photometry of saturated stars in ESA's PLATO mission,* ELTE University, Budapest
2016 Károly Seller, BSc thesis, *Study of ultralow amplitude Cepheid candidates*, ELTE University, Budapest
2016 Bálint Seli, BSc thesis *Variability in the Kepler pixel treasure trove,* ELTE University, Budapest
2015 Ottó Hanyecz, BSc thesis, *Population synthesis of RR Lyrae variable stars in the Kepler and K2 fields*, ELTE University, Budapest
2015 Gergely Dálya, BSc thesis *Searching for stellar and substellar companions of pulsating variable stars*, ELTE University, Budapest, OTDK (national science competition) second place

Teaching activities

2013 – 2020 **Pulsation Theory** (undergrad. and graduate level) SZTE, Szeged, Hungary
2018 **Exoplanets I** (undergrad) ELTE University, Budapest

2012 – 2018 **Space Photometry** (undergrad. and graduate) ELTE University, Budapest
2011 – 2013 **Astronomical Instrumentation** (undergrad.) ELTE, Budapest, Hungary
2003 – 2004 **Stellar structure and evolution** (undergrad.) ELTE, Budapest, Hungary
1998 – 2004 **Digital Image Processing and CCD Photometry** (undergrad.), ELTE

Membership in scientific societies

2014 – **member**, Roland Eötvös Physical Society
2014 – **member,** TESS Asteroseismic Science Consortium
2012 – **Hungarian representative,** European Helio- and Asteroseismology Network HELAS
2012 – **participant,** Hungarian CHEOPS group
2009 – **participant,** Hungarian *"Lendület"* Exoplanet Research Group
2007 – **participant,** CoRoT – Hungarian Asteroseismology Group
2007 – **member,** CoRoT RR Lyrae working group
2007 – **member,** Kepler Asteroseismic Science Consortium
2007 – **member of the public body,** Hungarian Academy of Sciences
2005 – **member**, International Astronomical Union, Division C Education, Outreach and Heritage, Division F Planetary Systems and Bioastronomy, Division G Stars and Stellar Physics, Commission 27 Variable Stars
1989 – **member,** Hungarian Astronomical Association

Invited talks and seminars

Apr 2021 **UNESCO International Round-table, Kazan University Astronomical Observatories in world culture and sciences,** *The past, present and future of Konkoly Observatory, Hungary*, invited talk
Aug 2020 **GATE Sumer school** Brno/virtual *The Kepler and K2 missions*, invited talk
Sep 2019 **Conference in honor of Miksa Hell**, Budapest, *Transit observations in present-day astronomy,* invited talk
May 2017 **General Assembly of the Roland Eötvös Loránd Physics Society**, Budapest, *Solar-like oscillations: a glimpse into the solar and stellar interiors,* invited talk
May 2017 **General Assembly of the HAS**, Budapest, *Revolution of exoplanets*, invited commentary
Aug 2013 **IAU Symposium 301:** Precision Asteroseismology, Wroclaw, Poland, *Blazhko effect in Cepheids and RR Lyrae stars*, invited review talk
Aug 2011 **MIT seminar,** MIT, Cambridge, MA, USA, *Asteroseismology with Kepler,* invited seminar talk
Jul 2011 **CfA SSP Seminar**, Harvard-Smithsonian Center for Astrophysics, Cambridge, MA, USA, *Period doubling in Kepler RR Lyrae stars,* invited seminar talk
Jul 2011 **4th KASC Conference**: From unprecedented data to revolutionary science, Boulder, CO, USA, *Cepheid(s) in the Kepler field,* invited talk
Jun 2010 **3rd KASC Conference**: Kepler Asteroseismology in Action, Aarhus, Denmark, *RR Lyrae Research in the Kepler Era,* invited talk

Professional visits

April 2013 Harvard-Smithsonian Center for Astrophysics, Cambridge, MA, USA, 3 weeks
Nov 2012 University of Sydney, School of Physics, Sydney, Australia, 1 month
Oct 2011 Asteroseismology in the Space Age program, Kavli Institute for Theoretical

	Physics, Santa Barbara, CA, USA, 3 weeks
Jul 2011	Harvard-Smithsonian Center for Astrophysics, Cambridge, MA, USA, 1 month
Sep 2009	Observatoire de la Côte d'Azur, Nice, France, 1 week
Mar 2000	University of Florida, Gainesville, USA, 1 month

Research grants

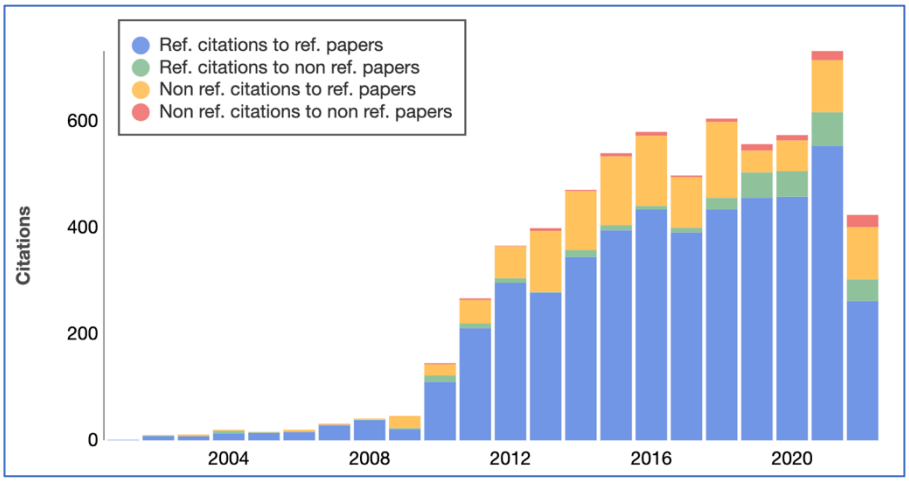
2018 – 2023 Lendület grant, LP2018-7/2018 *Near-field cosmology with pulsating variable stars: a Petascale challenge***, PI**, 199MFt
2015 – 2019 NKFIH K-115709 *Investigation of dynamical phenomena in pulsating variable stars with space telescopes*, **PI**, 40 MFt
2014 – 2019 'Lendület' grant of the Hungarian Academy of Sciences PI: M. Lugaro, *Giant stars as drivers of cosmic chemistry*, **participant**, 214 MFt
2013 – 2016 **Member, Hungarian coordinator**, FP7-SPACE-2012-1 "SPACEINN: *Exploitation of Space Data for Innovative Helio- and Asteroseismology*"
2013 – 2014 KTIA URKUT_10-1-2011-0019 National Development Agency, *Extending the asteroseismic program of the Kepler space telescope*, **PI** 6,6 MFt
2011 – 2015 OTKA K83790 *Stellar oscillation studies with the Kepler space telescope: the micromagnitude revolution*, **Principal Investigator** 39.4 MFt
2011 – 2015 **Member, Hungarian coordinator**, FP7-PEOPLE-2010-IRSES Research Network "*ASK: Sounding Stars with Kepler*" 15,000 EUR
2010 – 2013 OTKA MB08C-81013 *Structure and evolution of multiple planetary systems*, PI: L. Kiss, participant 89.1 MFt
2009 – 2014 'Lendület' grant of the Hungarian Academy of Sciences PI: L. Kiss, *Evolution of planetary systems around other stars*, **participant**, 275 MFt
2008 – 2009 Grant of the Ministry of Environment and Water and the Hungarian Space Office, Space physics with space instruments–Kepler PI: J. Kelemen, **participant**, 3 MFt
2002 – 2005 OTKA T-038440 *Application of time-frequency and nonlinear reconstruction methods*, PI: Z. Kolláth, **participant** 11.2 MFt
2001 – 2003 OTKA T-034615 *Physics of nova and supernova explosions,* ***participant***, PI: J. Vinkó, 7.3 MFt
1998 – 2001 OTKA T-026031 *Numerical modeling of nonlinear stellar pulsation*, **participant**, PI: Z. Kolláth, 3.7 MFt

Dissemination and public outreach

- 55 **short news and blog posts** on a dedicated astronomy portal (hirek.csillagaszat.hu)
- 32 **popular science papers** – a complete list of popular science papers can be found on my homepage http://www.konkoly.hu/staff/rszabo/papers.html#pop
- ~100 **public lectures**
- **organizer of the public lecture** in Veszprém during the KASC5 conference, speakers: Natalie Batalha (NASA Ames): Discovery of distant planets with the Kepler space telescope Zoltán Kolláth (MTA CSFK): The sound of stars
- frequent **TV and radio appearances**
- **talks** about astronomy as part of the Unconventional physics courses events in **high schools** and **elementary schools**
- ESO Public Outreach Network (ESON) **Hungarian representative**

Publication statistics

In refereed journals: **122**
Conference proceedings: **84**
Circulars and other**:** **26**
Cumulative impact factor: **640.0**
Number of citations: **6354**
Independent citations: **2853**
h-index: **43**



Yearly citations to R. Szabó's publications as of May 2022
(source: ADS)

Languages

Hungarian – native
English – fluent
French – Intermediate