

**Name: NOAM SOKER**

**Date: January 2020**

## **RESUME**

### **PERSONAL DETAILS**

**Name:** Noam Soker  
**Place and Date of Birth:** Israel, 2.9.1958  
**Marital Status:** Married + 3  
**Citizenship** Israel  
**Permanent Home Address:** Shimshit, Israel  
**Home Telephone Number:** 04-6012246 (054-5925995)  
**Office Address and Phone:** Department of Physics  
Technion , Haifa 32000, Israel  
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**Chair:** Charles Wolfson Academic Chair  
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### **ACADEMIC DEGREES**

<b><u>Dates</u></b>	<b><u>Name of Institution and Department</u></b>	<b><u>Degree</u></b>
1975-1977	Department of Mathematics and Physics, Oranim, University of Haifa	Beginning of Bachelor Degree in Physics
1980-1982	Department of Physics, Technion	Finishing Bachelor in Physics B.Sc. awarded: 4th May 1983 – Summa Cum Laude
1982-1986	Department of Physics, Technion	Doctoral studies Ph.D. awarded: 20th April 1986

**ACADEMIC APPOINTMENTS**

<b><u>Dates</u></b>	<b><u>Name of Institution and Department</u></b>	<b><u>Rank</u></b>
July-August 1984	Astronomical Institute, University of Amsterdam, Amsterdam – Holland	Visiting Researcher
September 1986 - August 1989	Department of Astronomy, University of Virginia, Charlottesville, Virginia, U.S.A.	Post-doctoral
September 1989 - September 1992	Harvard-Smithsonian Center for Astrophysics, Harvard University, Cambridge, MA, U.S.A.	Post-doctoral
October 1992 - May 1994	Oranim - University of Haifa, Science Education Department	Senior Lecturer
May 1994 - December 1998	Oranim - University of Haifa, Science Education Department	Associate Professor
December 1998-September 2003	Oranim - University of Haifa, Science Education Department	Full Professor
October 2003	Department of Physics, Technion	Full Professor

**PROFESSIONAL EXPERIENCE**

October 1994 – October 1998	Chairman of the Mathematics-Physics Department, Oranim - University of Haifa
May 2005 – September 2009	Head of the undergraduate program at the Physics Dept.
October 2009 – December 2015	Dean of the Faculty of Physics, Technion
August 2016 –	Dean of Science, Guangdong Technion Israel Institute of Technology (GTIIT)
October 2017 –	Head of the Center for Pre-University Studies, Technion

**RESEARCH INTERESTS**

- **Hot gas in galaxy clusters:** Heating the intra-cluster medium with jets launched from super-massive black holes, and feeding the black hole with cold gas. Specific contributions: the cold feedback mechanism; inflation of 'fat bubbles'.
- **The death of massive stars:** Core collapse supernovae: Specific contributions: the jittering-jet model for explosion;
- **Type Ia supernovae.** Specific contributions: The core-degenerate model.
- **The death of solar-like stars:** Planetary nebulae, and the destruction of planets. Specific contributions: shaping planetary nebulae by stellar companions and the influence of planets on stellar evolution.
- **Intermediate - Luminosity Optical Transients (ILOTs):** Eruptive stars in the gas between Novae and Supernovae. Specific contributions: Modeling the eruption by mass transfer from an unstable star to a main sequence companion.
- **Eta Carinae:** The formation of the nebula around one of the most massive binary systems in the galaxy, and the strange behavior of the binary system. Specific

contributions: The role of mass transfer in the present behavior of the system and during the Great Eruption of the 19th century.

### **TEACHING EXPERIENCE**

	<b><u>Title</u></b>	<b><u>Year</u></b>	<b><u>Type</u></b>	<b><u>Level</u></b>
1)	Current Topics in Astronomy	Academic Year 1988-1989 Astronomy, Univ. of Virginia	Weekly 1 hour	Master + Doctor
2)	Physics 0 (Oranim)	1992-2000 (1 semester)	Weekly 6 h.	B.Sc.
3)	EM, Waves and Optics(Oranim)	1993 (1 semester)	Weekly 4 h.	B.Sc.
4)	Introduction to Astronomy (U. of Haifa)	1993-2000 (1 semester)	Weekly 2 h.	B.A.
5)	Introduction to Statistical Mechanics (Oranim)	1994 (1 semester)	Weekly 2 h.	B.Sc.
6)	Introduction to Quantum Mechanics (Oranim)	1994 (1 semester)	Weekly 4 h.	B.Sc.
7)	Nuclear Reactor and Nuclear Weapon (U. of Haifa)	1995-2000 (1 semester)	Weekly 2 h.	B.A.
8)	Introduction to Nuclear Physics (Oranim)	1995; 97; 99; 2001 (1 semester)	Weekly 4 h.	B.Sc.
9)	Introduction to Physics of 20th Century (U. of Haifa)	1996-2000 (2 semesters)	Weekly 2 h.	B.A.
10)	Special Relativity (Oranim)	1998; 2000 ( 1 semester)	Weekly 2 h.	B.Sc.
11)	Astrophysics (Oranim)	2000 (1 semester)	Weekly 2 h.	B.Sc.
12)	Physics 1 for biologists (Oranim)	2002 (1 semester)	Weekly 5 h	B. Sc
13)	Physics 1m/1P (Technion)	2003-2009; 2015	Weekly 3 h	B. Sc
14)	Physics 2m (Technion)	2004-2007	Weekly 4 h	B. Sc

15)	Stellar Physics 1	2006,09	Weekly 3h	PhD+ B.Sc.
16)	Topics in Stellar Evolution	2007	Weekly 2h	PhD
17)	Astrophysics and Cosmology (Technion)	2007-10 (1 semester)	Weekly 3 h.	B.Sc.
18)	Black Holes (Technion)	2011 (1 semester)	Weekly 2 h.	B.Sc.

### **PUBLIC PROFESSIONAL ACTIVITIES**

#### **Refereeing for Journals:**

Refereeing of Papers for the Following Journals:

- Astronomical Journal
- Astrophysical Journal
- Astrophysical Journal Letters
- Nature
- Science
- Publications of the Astronomical Society of the Pacific
- Monthly Notices of the Royal Astronomical Society
- Astronomy & Astrophysics

#### **High School Teaching:**

1982-1986      Half Time Teaching: Mathematics, Physics and Chemistry:  
Grades 7-12: Naaman High School

### **LONG PROFESSIONAL VISITS ABROAD**

Aug 01-Feb 02      Department of Astronomy, University of Virginia,  
Charlottesville, Virginia, U.S.A. - 6 months Sabbatical.

### **CONFERENCES**

#### **Plenary or invited talks:**

	Meeting	Place and date	Title
1)	ESO/CTIO Workshop: Mass Loss on the AGB and Beyond	La Sarena, Chile, January 21-24, 1992	Common Envelopes and Axisymmetrical Mass Loss
2)	Magnetic Effects in Accretion and Cooling Flows (International Workshop)	Technion, Haifa, Israel, June 3-6, 1996	Magnetic Fields and Inflow in Cooling Flows
3)	Galactic and Cluster Cooling Flows (Inter- national Workshop)	Oranim - University of Haifa, Israel, August 5-8, 1996	Magnetic Fields and Inflow in Cooling Flows

4)	Astrophysical Fluids - From Atomic Nuclei to Stars and Galaxies (International Meeting)	Technion, Haifa, Israel, January 12-15, 1998	Interaction of Planets with AGB and RGB Stars
5)	Asymmetrical PNs II	MIT, MA., U.S.A., August 3-6, 1999	The Transition to Axisymmetrical Mass Loss
6)	Post AGB Objects	Torun, Poland, July 5-7, 2000	Planets and Axisymmetrical Mass Loss
7)	Planetary Nebulae	Canberra, Australia November 19-23, 2001	Planetary Nebulae in the Scheme of Binary Evolution
8)	Symbiotic Stars: Probing Stellar Evolution	La Palma, Spain, May 27-31, 2002	Evolution with Mass Transfer
9)	IAU Symposium 219: Stars as Suns: Activity, Evolution and Planets	Australia, July 21-25, 2003	Influence of Planets on Parent Stars: Angular Momentum
10)	IAU Colloquium 194: Compact Binaries in the Galaxy and Beyond	La Paz, Baja California Sur, Mexico, November 17-22, 2003	Energy and Angular Momentum Deposition During Common Envelope Evolution
11)	Planetary Nebulae as Astronomical Tools	Gdansk, Poland, June 28, July 2, 2005	Can we ignore magnetic fields in studies of PN formation, shaping and interaction with the ISM?
12)	The Nature of V838 Mon and its Light Echo	La Palma, Spain, May 16-19, 2006	On the main sequence merger model
13)	Star-disk interaction in young stars	Grenoble, France, May 21-25 2007	The role of thermal pressure in jet launching
14)	Asymmetrical Planetary Nebulae IV	La Palma, Spain June 18-22, 2007	Member in a Panel Discussion
15)	The Monster's Fiery Breath: Feedback in Galaxies, Groups, and Clusters	Madison, USA June 1-5, 2009	The moderate cooling flow model
16)	The Fourth Meeting on Hot Subdwarf Stars and Related Objects	Shanghai, China July 20-24, 2009	The Role of Planets in the Formation of EHB Stars
17)	Astrophysical Outflows and Associated Accretion Phenomena	Rio de Janeiro August 6-7, 2009	Are jets rotating at the launching?"
18)	Evolution of galaxies, their central black holes and their large-scale environment	Potsdam September 20-24, 2010	A Moderate Cooling Flow Phase at Galaxy Formation
19)	Planets Around Stellar Remnants	Arecibo, January , 23-27 2012	Transient events from the destruction of planets
20)	Galaxy Clusters as Giant Cosmic Laboratories	Madrid, May, 21-23, 2012	The cold feedback mechanism
21)	The death of stars and the lives of galaxies	Santiago, April 8-12, 2013	The summary talk
22)	Interacting Binaries and Isolated Neutron Stars	Cefalu, Sicily, June 9-14, 2014	The Core-Degenerate Scenario

23)	Mondello Workshop 2016: Frontier research in astrophysics II	Palermo, Italy, May 23-28, 2016	Jet-Feedback Mechanism, from supernovae to clusters of galaxies
24)	Supernova Remnants: An Odyssey in Space after Stellar death	Crete, Greece, Juner 6-10, 2016	The role of jets in exploding supernovae and shaping their remnants
25)	The asymmetrical planetary nebulae (APN) VII.	Hong Kong, December 4-8, 2017	Planets, Planetary Nebulae, and Intermediate Luminosity Optical Transients (ILOTs)
26)	Progenitors of Type Ia Supernovae	Lijiang, China, August 5-9, 2019	SN Ia scenarios in 2019: a rising demand for clean and symmetrical explosions

### **A large impact by presenting unique views/models/ideas and leading discussions**

1)	The asymmetrical planetary nebulae (APN) series which I initiated in 1994.	Oranim 1994; MIT 1999; Seattle 2003; La Palma; 2007; Manchester 2010; Mexico 2013; Hong Kong 2017;	Very active member on the organizing committees; chairing sessions; leading discussions
2)	Supernovae Illuminating the Universe	Garching, Germany, September 12-14, 2012	The Core-Degenerate (CD) scenario for SN Ia; The Jittering-Jets model for core-collapse SNe.
2)	F.O.E. fifty-one ergs	Raleigh, NC, May 13-17, 2013	CD scenario; Jittering-jets model
3)	Stellar Tango at the Rockies 14	Lake Louise, Canada, March 23-28, 2014	Merger during the CE phase; Jets in CEs
4)	Characterizing Planetary Systems across the HR Diagram	Cambridge, UK, July 28-31, 2014	Planets – star interaction; planet-star merger
5)	Supernovae in the local Universe	Coffs Harbour, Australia, August 11-15, 2014	CD scenario; jittering-jets model
6)	The physics of evolved stars; A conference dedicated to the memory of Olivier Chesneau".	Nice, France, June 8-12, 2015	The grazing-envelope evolution (GEE)
7)	The impact of binaries on stellar evolution	Garching, Germany, July 3-7, 2017	Presented a daily summary of the meeting
8)	Shocking Supernovae: surrounding interactions and unusual events	Stockholm, Sweden, May 28-June 1, 2018	Presented a daily summary of the meeting, and a final summary

### **Active participation in organizing conferences:**

- 1) Organization of an International Scientific Conference in Astrophysics (Co-chairman with Amos Harpaz): "Asymmetrical Planetary Nebulae", August 9-11, 1994. The Conference took place in Oranim - University of Haifa.
- 2) Organization of an International Scientific Meeting in Astrophysics (Chairman): "Galactic and Cluster Cooling Flows", August 5-8, 1996. The Meeting took place in Oranim - University of Haifa.

- 3) Member of the organizing committee (and initiator) of a meeting (the second in the series initiated at Oranim 1994): "Asymmetrical Planetary Nebulae II: From Origins to Microstructures". August 3-6, 1999, MIT, U.S.A. Organizing Committee: Joel Kastner, Noam Soker and Saul Rappaport.
- 4) Member of the organizing committee (and initiator) of a meeting: "The Riddle of Cooling Flows in Galaxies and Clusters of Galaxies", The University of Virginia, 31 May – 4 June, 2003.
- 5) Member of the organizing committee (and initiator) of a meeting: "Asymmetrical Planetary Nebulae III: Winds, Structure and the Thunderbird", (the third in the series initiated at Oranim), Mt. Rainier, WA, USA, 28 July – 1 August, 2003.
- 6) Member of the organizing committee of a meeting: "Heating vs. Cooling in Galaxies and Clusters of Galaxies", Garching, Germany, August 6-11, 2006.
- 7) Member of the organizing committee (and initiator) of a meeting: "Asymmetrical Planetary Nebulae IV, La Palma, June 18-22, 2007.
- 8) Member of the organizing committee (and initiator) of a meeting: "Asymmetrical Planetary Nebulae V, Manchester, UK, June 20-5, 2010.
- 9) Co-chair and the initiator of a meeting: "Planetary Systems Beyond the Main Sequence", Bamberg, Germany, August 11-14, 2010.
- 10) Member of the organizing committee (and initiator) of a meeting: "Asymmetrical Planetary Nebulae VI, Mexico, November 4-8, 2013.
- 11) Member of the organizing committee: "Characterizing Planetary Systems Across the HR Diagram", Cambridge, UK, July 28-31, 2014.

## **HONORS**

1981	Awards from the Israel Association of Physics
1983	President's List Honor Student Scholarship, Technion
1985	Moshe Ben-Sira Fellowship received as an honor student, Technion
1992-1995	Alon Fellowship
2011	Yanay Prize for Academic Excellence at the Technion

## **GRADUATE STUDENTS**

<b><u>Student's Name</u></b>	<b><u>Title of Thesis/ Dissertation</u></b>	<b><u>Degree</u></b>	<b><u>Date</u></b>
David L. Blank (U. of Virginia)	Seyfert Galaxy Evolution	Master	May 1989
Philip C. Plait (U. of Virginia)	The Electron Density Profile of the Planetary Nebula NGC 6826	Master	May 1990
Essam Zoabi	The Intracluster Medium (supervision with Prof. Oded Regev)	PhD	1998

Muhammad Akashi	X-Ray Emission From Colliding Winds In Planetary Nebulae (supervision with Prof. Ehud Behar)	PhD	October 2008
Assaf Sternberg	Shaping of Planetary Nebulae and Radio Bubbles in Galaxy Clusters	PhD	March 2009
Amit Kashi	The Periastron Passage of the Binary Star Eta Carinae	PhD	September 2011
Carmit Gordon Lahav	Correlations of Black Hole Mass with Host Galaxy Properties	Master	February 2012
Marjan Ilkov	Common envelope WD-core merger as Type Ia supernova progenitors	Master	September 2012
Danny Tsebrenko	Interaction of Stellar Winds with Circumstellar Matter	Master	October 2012
	Interaction of supernova ejecta with asymmetrical circumstellar matter	PhD	October 2015
Michael Refaelovich	Chains of X-ray deficient bubbles as consequence of vortices fragmentation	Master	October 2012
Oded Papish	Expel of gravitationally bound mass by fast jets from compact objects	PhD	September 2015
Liron Mcley	Stellar Instability and Intermediate Luminosity Optical Transients (ILOTs)	Master	November 2014
Shlomi Hillel	Dynamics of Clumps in the Intracluster Medium	PhD	January 2016
Avishai Gilkis	Heating of a Medium by Jets from a Compact Object	Master	October 2012
	Intermittent Accretion Disk Production in Core Collapse Supernovae	PhD	September 2016
Efrat Sabach	Transient Event from a Core-WD Merger	Master	October 2013
	Mass Transfer in Stellar Binary Systems Resulting in Peculiar Objects	PhD	May 2018
Sagiv Shiber	The Role of Energetic Jets in Late Stages of Stellar Evolution	PhD	April 2019
Naveh Levanon	Evolution, merging and explosion of degenerate stars as Type Ia supernovae	PhD	September 2019
Roni Gofman	Energizing Supernovae by a Central Engine	Master	
Noa Kaplan		Master	
Aldana Grichener		Master	

### **POSTDOCTORAL FELLOW:**

Fabio Pizzolato 2004-2007  
Adam Frankowski 2008-2010  
Ealeal Bear 2009-2011

### **RESEARCH GRANTS**

1990	"Wind Interaction in Planetary Nebulae"	Soker, N. and Raymond, J.C.	Grant from NASA \$31,937
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1990	"UV Spectra of Magnetically Disturbed Accretion Disks"	Raymond, J.C., van Ballegooijen, A., Soker, N., Nauche, C.W. and Miller, G.	Grant from NASA \$33,000
1990	"The Eclipsing Intermediate Polar LB 1800	Raymond, J.C., Buckley, D.A., Mauche, C.W., Miller, G. and Soker, N.	Grant from NASA \$12,600
1991	"Resonant Excitation of P- and G-Waves in Common envelopes"	Soker, N.	Grant from NASA \$29,145
1993	X-ray Filaments in Cluster Cooling Flows	Soker, N. and Regev, O.	Grant: the Technion- Univ. of Haifa Foundation \$5,000

1994-1997	X-ray Filaments in Cluster Cooling Flows	Soker, N. and Regev, O.	Grant: Israel Science Foundation, 3 years, \$30,000/year
1997-2000	Jets and Axisymmetrical Structures in Planetary Nebulae and Young Stellar Objects	Regev, O. and Soker, N.	Grant: Israel Science Foundation, 3 years, \$ 35,000/year
1999-2002	The Role of Binary Companions in Shaping Circumstellar Media	Soker, N. and Rappaport, S.	Grant from the US-Israel BSF \$ 22,000/year

2002-2005	Mass ejection in Late Stages of Stellar Evolution	Soker, N.	Grant: Israel Science Foundation; 3 years, \$ 30,000/ year
2008-2012	Connecting Shaping of Planetary Nebulae, Eta Carinae, and Cooling Flows	Soker, N.	Grant: Israel Science Foundation; 4 years, \$ 30,000/ year
2011-2015	Winds interaction in planetary nebulae and related objects	Soker, N. and Kastner, J. H.	Grant: US-Israel BSF; 4 years, \$ 19,000/ year
2016-2020	Shaping planetary nebulae by triple stellar systems	Soker, N.	Grant: Israel Science Foundation; 4 years, \$ 40,000/ year
2017-2020	Shaping Planetary nebulae by swallowing a binary system	Soker, N. and Schreier, R. (RAFAEL)	Pazy Fund (Israel Atomic Energy Commission); 4 years, \$ 60,000/ year