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# My Fifteen Years at IKI, the Space Research Institute:

## Position-Sensitive Detectors and Energetic Neutral Atoms Behind the Iron Curtain

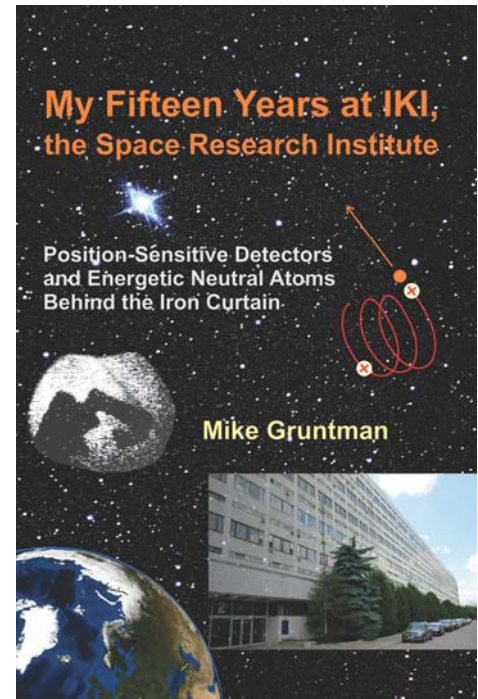
Mike Gruntman

Interstellar Trail Press, California, 2022

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328 pages with 150+ figures and 180+ references  
Index: 600+ entries, including 160+ individuals



This is a personal story of a young physicist in the Soviet Union, a country distinctly different from the Western world. Mike Gruntman worked primarily in space physics and on particle detectors and science instrumentation. He was among the early pioneers in the emerging field of imaging of space plasmas in fluxes of energetic neutral atoms (ENAs). Today, multiple space missions operate ENA imaging instruments.

The events in this book unfolded during the Cold War in the 1970s and 1980s. At that time, the Iron Curtain stood firmly in place

during the epic struggle between the dark forces of communism and the free world. Gruntman describes the life and work of a scientist in the totalitarian Soviet Union, including elite education in physics and engineering, the disfunction and ideological control of a centrally planned state, collaboration with scientists abroad, and the impact of foreign radio broadcasts. These, and other glimpses into the realities of the Soviet past, serve not only as background to the story; they also inform us about the nature of neo-Marxism, which is gaining popularity in the free world today

**About the author.** Dr. Mike Gruntman is a professor of astronautics and the founder of a space engineering program at the University of Southern California (USC). As a child, he grew up on the Tyuratam (Baikonur) missile range and space launch base and went on to graduate from the Moscow Physical-Technical Institute (Fiztekh) and become a research fellow at the leading space science institute in the USSR Academy of Sciences, the Space Research Institute (IKI).

Mike joined USC in March 1990. He is an accomplished specialist actively involved in R&D programs in space science and space technology and has authored and co-authored more than 300 scholarly publications, including six books.

<http://astronauticsnow.com/iki15/>

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## My Fifteen Years at IKI, the Space Research Institute

### Preface

#### Ch. (Chapter) 1. From Fiztekh to IKI

Fateful telephone call  
Moscow Physical-Technical Institute (MFTI, MIPT)  
Fiztekh (Fiztech, PhysTech) and Fiztekh system  
New institute in the Academy of Sciences  
Students at IKI. Science advisor or *shof*.

#### Ch. 2. Department of Space Gas Dynamics

Semi-independent fiefdom  
Atomic collisions laboratory  
Rudderless without a helmsman  
To join or not to join  
Verboten travel and patriotic duty

#### Ch. 3. Blazing My Own Trail

Research fellow  
Detection of interstellar helium atoms in ... 1975  
Secondary electron multipliers  
Master's thesis  
My first publication was ... a NASA TM  
Detecting individual neutral particles  
Behaving oneself vs. having fun

#### Ch. 4. Per Aspera et cum Alcohol ad Astra

Rich in poverty and poor in riches  
Universal hard currency  
On "friends" and "friendship." Squatters  
Vigilant guards on duty and on the take  
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Working hours and after  
Hole in the wall; mystery of welded windows

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Elektron and SNIIP  
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Wedge-and-strip collector  
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No road to independence. Glacially slow advance.  
SAO: BTA-6, RATAN-600. UV space telescope.

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Remote places in the wilderness  
"Clandestine" advice. Snafu in science diplomacy.  
It all could end in one moment  
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*Forbidden fruit of foreign broadcasting*

Radio Liberty and Radio Free Europe  
CPSU and fellow travelers fight back  
Keeping the spirit of freedom alive  
Printed word and Sir Winston

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Birth of ENAs  
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Detecting neutral atoms directly  
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On a free range

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MASTIF for interstellar helium and SIMS

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Ultrathin foils for TOF instruments  
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GAS Experiment in the "heroic" ENA era  
Extracurricular affairs in Poland  
NSZZ *Solidarity* and ZOMO in Gdansk in 1984  
Early advances of ENAs

#### Ch. 10. Neutral Atoms Reach Critical Mass

Serendipitous discovery of magnetospheric ENAs  
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What is 'Whoa'?  
Fifth Workshop in Moscow  
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Sumgait, Nagorno-Karabakh, Yerevan in 1988  
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Mission-critical event: separation of rocket stages  
Ignition of the second stage (and joining USC)  
Remarkable colleagues and friends

Appendix A. Neutral Atom Workshops in the 1980s

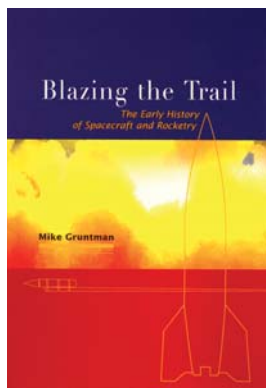
Appendix B. Brief History of Energetic Neutr. Atoms

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Appendix D. Pronunciation guide

Appendix E. Selected Bibliography

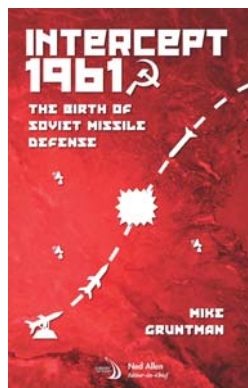
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Winner of the Luigi Napolitano Award (2006) from the International Academy of Astronautics

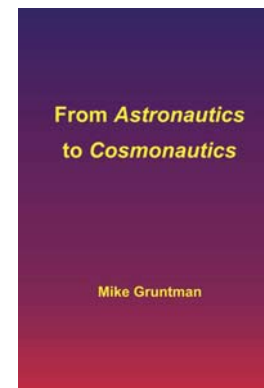
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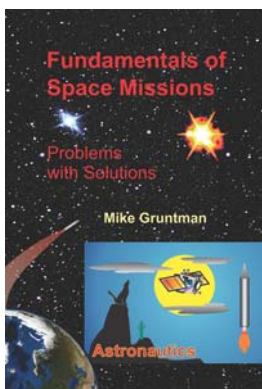
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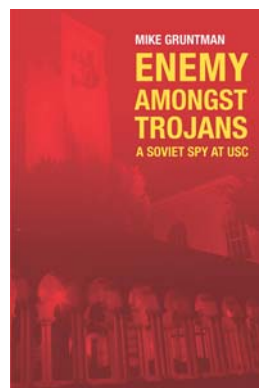
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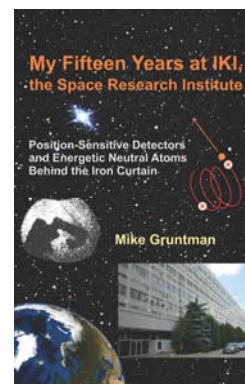
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