



ISSS 2023

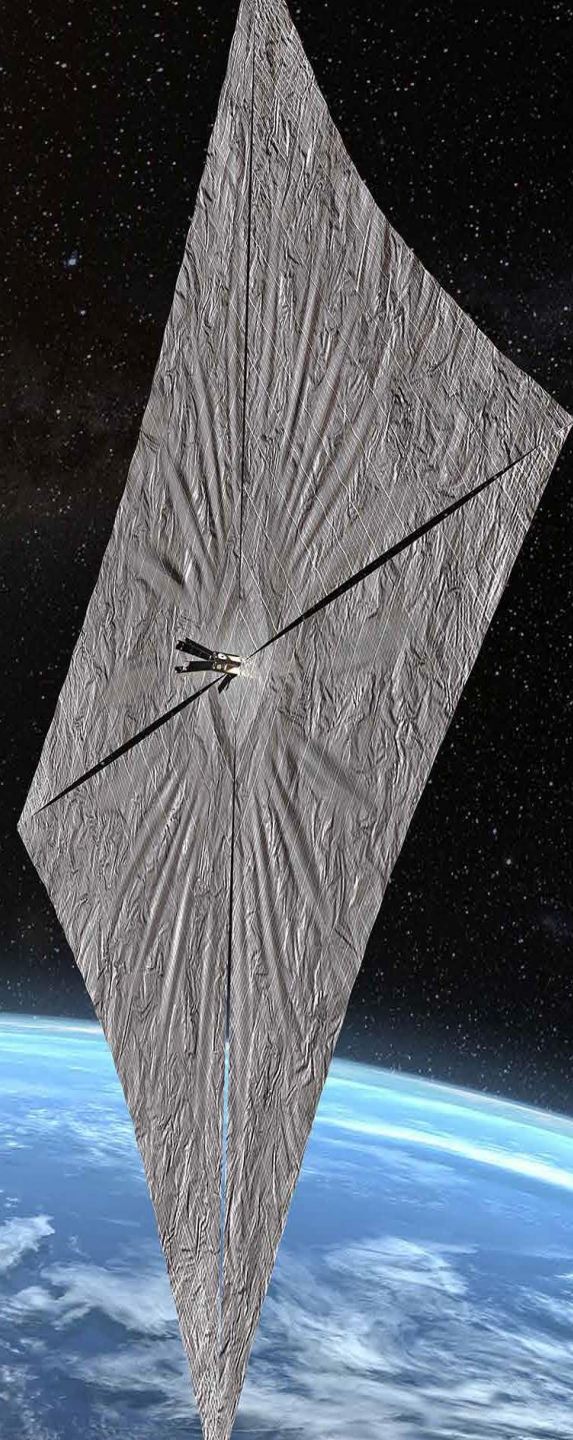
The 6th International Symposium on
Space Sailing

June 5-9, 2023

New York City College of Technology
300 Jay Street, Brooklyn, NY 11201

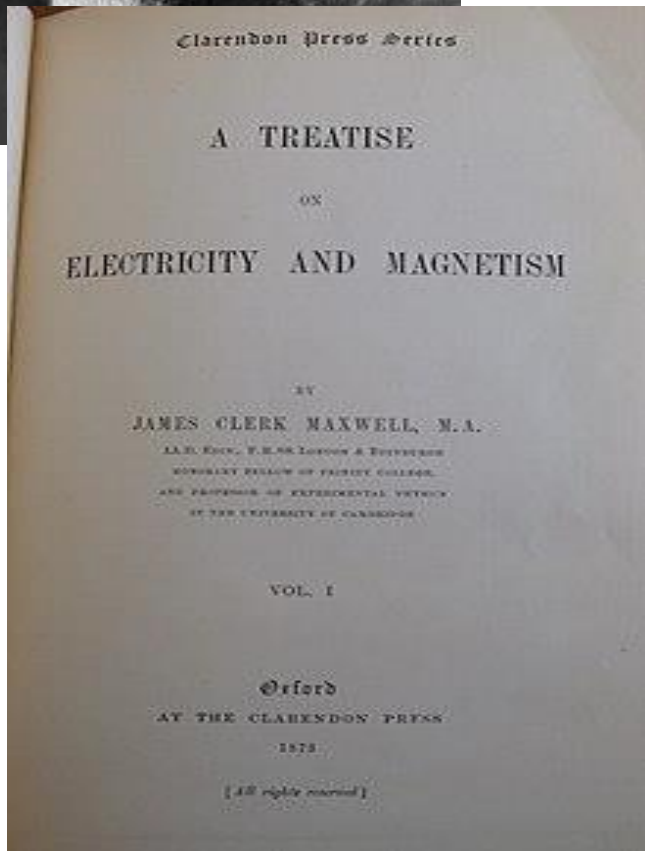
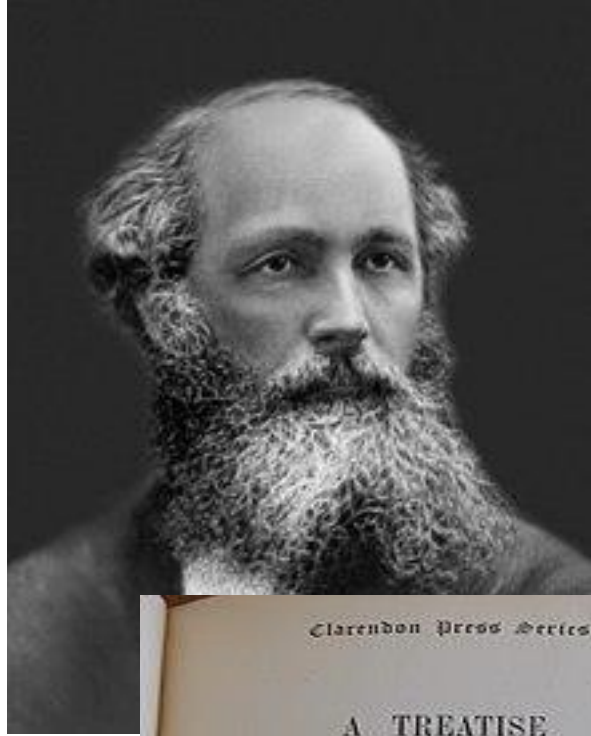


Roman Kezerashvili
City Tech, CUNY



FACTS LIST

James Clerk Maxwell



- The fact that electromagnetic radiation exerts a pressure upon any surface exposed to it was predicted theoretically by Scottish theoretical physicist and mathematician **James Clerk Maxwell** in 1871. The main results of the theory of electromagnetic waves was presented to the Royal Society on December 8, 1864 and published in 1865 and then in his famous **A Treatise on Electricity and Magnetism - 1873**. According to Maxwell's electromagnetic theory, electromagnetic waves carry the energy and linear momentum and the radiation pressure exerted on the surface of satellite or solar sail due to momentum transport by photons is given by

$$P = \frac{2\eta S}{c}, \quad S = \frac{L_s}{4\pi r^2},$$

Yakov Perelman



Yakov Perelman in 1915 in his book **Interplanetary Journeys** came to the idea to use the solar radiation pressure for the propulsion of a spacecraft. However, he concluded that light pressure is too small to overcome gravity but does not consider using sails to increase force. The father of Soviet astronautics Tsiolkovsky always thought highly of the talent and creative genius of Perelman and he wrote the preface for a new 1923 edition Perelman's **Interplanetary Journeys.**

Konstantin Tsiolkovsky



Tsiolkovsky worked on the idea of solar sailing in the 1920's and suggested using solar pressure to drive spacecraft.

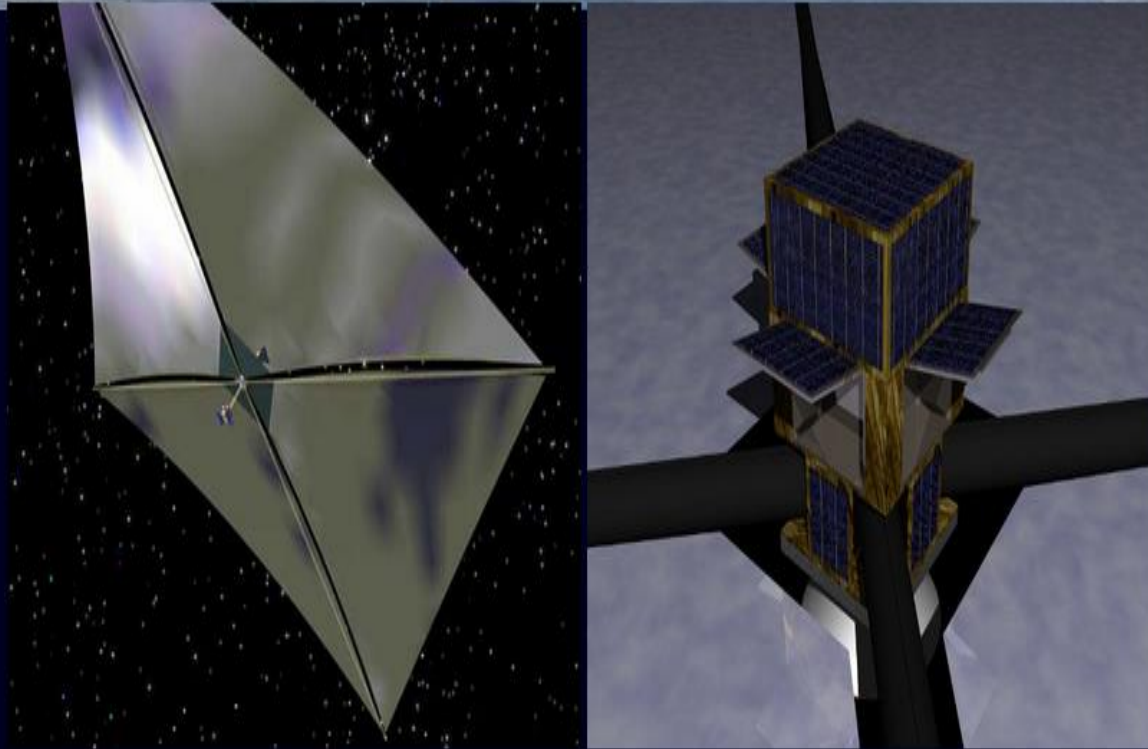
Fridrickh Tsandler



Fridrickh Tsandler in 1924 suggested and developed the theoretical concepts of solar sailing.

1st International Symposium on Solar Sailing (ISSS 2007)

27 – 29 June 2007
Herrsching, Germany



The 1st International Symposium on Solar Sailing (ISSS 2007) took place 27 – 29 June 2007 at Herrsching at Lake Ammersee, Bavaria, Germany.

Bernd Dachwald & Manfred Leipold

The symposium was focused on recent advances in solar sailing technologies and near-term solar sailing missions, mission applications, and programs.

Japanese Spacecraft Successfully Deploys First Solar Sail in Space

It was reported that the
First Solar Sail
IKAROS
was successfully deployed



2ND INTERNATIONAL
SYMPOSIUM ON
**SOLAR
SAILING**
JULY 20-22, 2010
NEW YORK
NEW YORK COLLEGE OF TECHNOLOGY
CITY UNIVERSITY OF NEW YORK
BROOKLYN • NEW YORK • USA

www.citytech.cuny.edu/ISSS2010

International Organizing Committee

Hexi Baoyin - *China*
Bernd Dachwald - *Germany*
Les Johnson - *NASA, USA*
Louis Friedman - *Planetary Society, USA*
Junichiro Kawaguchi - *JAXA, Japan*
Roman Kezerashvili - *CUNY, USA*
Manfred Leipold - *Germany*
Gregory Matloff - *CUNY, USA*
Malcolm Macdonald - *UK*
Colin McInnes - *UK*
Giovanni Mengali - *Italy*
Timothy Van Sant - *NASA, USA*
Bong Wie - *ISU, USA*

THE SYMPOSIUM
WILL FOCUS ON
RECENT ADVANCES
IN SOLAR SAILING
TECHNOLOGIES,
NEAR-TERM SOLAR
SAILING MISSIONS
AND THE PHYSICS
OF SOLAR SAILING.

Topics:

dynamics analysis and
testing of solar sails,
advanced materials and
structural concepts of solar
sails, space environmental
effects and solar
spacecraft protection,
solar spacecraft charging,
enabling technologies,
navigation, control,
modeling, mission
applications, and programs.

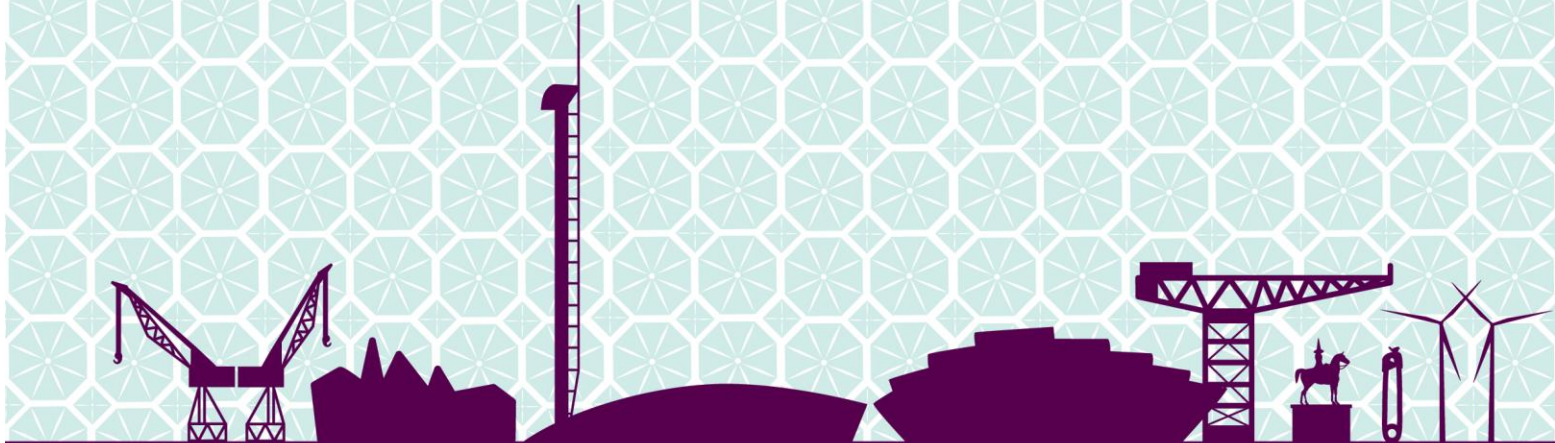
For information

to submit an abstract or
to register for the
conference, please go to
www.citytech.cuny.edu/ISSS2010

Questions

related to the conference
can be directed to
rkezerashvili@citytech.cuny.edu





The Third International Symposium on

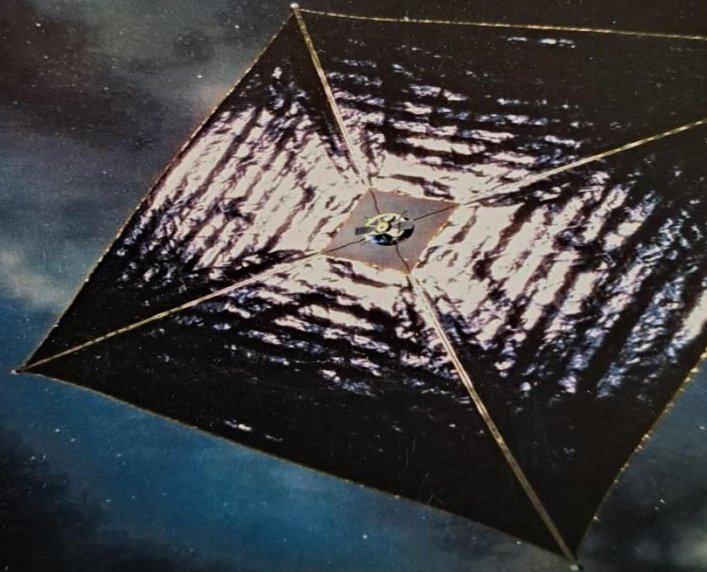
SOLAR SAILING

The Third International Symposium on Solar Sailing will be held June 11-13th, 2013, at the University of Strathclyde in Glasgow, Scotland.



4th International Symposium on Solar Sailing

January 17-20, 2017



Kyoto · Japan
Kyoto Research Park

The fourth International Symposium on Solar Sailing (ISSS 2017) held
on 17th - 20th January 2017 at
the Kyoto Research Park, Kyoto, Japan



ISSS 2019

The 5th International Symposium on Solar Sailing (ISSS) was held at the FH Aachen University of Applied Sciences in Aachen, Germany, from 30 July to 2 August 2019.

Dear Colleagues

**Today solar-photon sailing in
Space is no longer a nice dream - it
is a Strong Reality!**

Today in New York we are opening a new chapter
International Symposium on Space Sailing





Dr. Bernd Dachwald

Chair of the 4th ISSS 2019

**FH Aachen University of Applied
Sciences, Germany**



Dr. Reginald Blake

**Associate Provost and
Dean of Curriculum and Research**



Dr. Justin Vazquez-Poritz
Dean of the School of Arts & Sciences

New York City College of Technology

WELCOMES

The 6th International Symposium on Space Sailing

ISSS 2023

New York, June 5 – 9, 2023



Marc Jochemich

Head DLR Washington Office
German Aerospace Center