



*Spring will come and so will happiness...*

# IUT International E-Newsletter

A Window to International Activities of IUT

Volume 3, Issue No. 5

February 2022



## What we read in this issue:

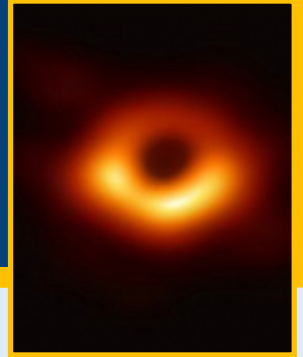
- IUT International News
- IUT News on Industry & Technology
- IUT Awards and Honors
- International Opportunities



## A Remarkable Discovery of Science: A Lone Black Hole in the Milky Way



*A Team of International Astronomers Including a Faculty Member of IUT Reports the First-ever Wandering Black Hole in Our Galaxy*



A group of astronomers has discovered an isolated black hole in the Milky Way through the microlensing technique. Prof. Sedighe Sajadian from the Physics Department of Isfahan University of Technology has contributed to this significant discovery through membership in the MiNDSTEp group.


This interesting study has attracted much attention from many research groups and led to several significant reports in scientific journals such as Nature, Scientific American, and Science Alert.

This great discovery may help researchers understand how isolated black holes form and estimate their abundance among the galaxies. Gravitational microlensing is a unique method for discerning isolated and dark objects, which act as a gravitational lens. During a lensing event, the light of a background source star is magnified versus time due to passing close to the lens object. In order to determine the lens parameters, such as its mass and distance, and to resolve the degeneracy problem, the astrometric motion of the source star and parallax effect should be measured additionally. However, the astrometric motion of the source star is considerable when the lens is so massive, e.g., black holes. Hence, through astrometric microlensing, one can resolve stellar-mass black holes, even if they are isolated and dark.

By this method, an isolated black hole with a mass of around 7 solar masses in the Galactic disk was discovered recently. Several ground-based telescopes as well as the Hubble space telescope observed the source star for 6 years to measure the parallax effect, astrometric motion of the source star, and the lensing light curve. Danish 1.54m telescope which is operated with the MiNDSTEp group has taken more than 900 images from this event. Prof. Sedighe Sajadian from the Physics Department of IUT has been collaborating with this project in an international team as a part of the MiNDSTEp group.

### **References:**

 <https://arxiv.org/pdf/2201.13296>

 <https://www.nature.com/articles/d41586-022-00346-6?fbclid=IwAR3fmK1cLmNhKeFt9kw-S3dm9Vz-9dOVLrh2L4-UgyJJbYYt6TGzfcM55g>

 <https://www.scientificamerican.com/article/astronomers-find-first-ever-rogue-black-hole-adrift-in-the-milky-way/>

 <https://www.sciencealert.com/for-the-first-time-a-lone-black-hole-has-been-found-wandering-the-milky-way>



## A Meeting of IUT President with International Students

IUT President and the Director of the International Scientific Cooperation Center had a Meeting with the IUT International Students on February 22, 2022.



In this meeting, the regulations approved by the Ministry of Science to facilitate the study process for international students studying doctoral programs were discussed and **Prof. Meybodi**, IUT President, assured the students that all the legal capacities of the Ministry of Science will be used to facilitate the education process for international students. He stated that international students of the university are scientific ambassadors and guests of Iran and deemed this as an honor for this university to provide services for them.

**Prof. Omidi**, Director of the International Scientific Cooperation Center of the University, also talked about the appropriate facilities for promoting the admission of foreign students in the Iranian universities and explained that one of the suitable facilities for the admission of international students is the possibility of submitting a doctoral dissertation in English. He also stated that IUT has a world-renowned academic rank and position in terms of education and more financial facilities will be provided to attract international elite students in the future.

**Prof. Reza Tikani**, Vice Chancellor for Educational Affairs at IUT, also attended the meeting and answered the students' questions on educational affairs. He stated that the application of facilitating regulations for the postgraduate level is highly positive to improve the educational process for international students. He also noted that the suggestions of students for the promotion of undergraduate educational services will be dealt with in the relevant committees.

The international students expressed their appreciation for the suitable dormitory facilities of the university and also requested for improving the quality of student services, consular affairs, dormitory accommodation during holidays, and exams process in Persian. The students who attended the meeting were from **Iraq, Lebanon, Yemen, Syria, and Zimbabwe**.

**IUT Webinars:**



**The fourth tourism conference on sustainable development as well as scientific and educational tourism was held at Isfahan University of Technology on February 20, 2022.**

At this conference, scientific lectures were delivered on different subjects such as: the role of scientific and educational tourism in sustainable tourism development, scientific tourism diplomacy, the role and importance of factors in sustainable tourism, ecotourism, strategies for the development and protection of nature and cultural heritage, necessities and capacities of scientific and educational tourism in historical attractions, the role of experience economy in entrepreneurship of local communities, recreation and education in tourism, and planning and using values and functions of wetlands. The Director-General of Cultural Heritage, Handicrafts, and Tourism of Isfahan Province participated and presented a lecture at the conference.

This meeting, which is considered as part of the social responsibility of IUT, dealt with scientific and educational tourism, and this mission of scientific tourism for Isfahan is given to the IUT Department of Natural Resources Engineering.

In this regard, two scientific lectures from IUT entitled "Scientific Diplomacy and Tourism" by **Prof. Mohammad Javad Omidi**, Acting President for IUT International Affairs, and "Ecotourism: A Strategy for Development and Protection of Nature and Cultural Heritage" by **Prof. Mahmoud Reza Homami**, faculty member of IUT Natural Resources Department, were presented at the conference. [Read more...](#)

**IUT News on Industry and Technology:**

**IUT Steel Research Center and the Third National Steel Festival and Exhibition**

The third National Iranian Steel Festival & Exhibition was held by the Iranian Association of Steel Producers at the Olympic Hotel in Tehran, from February 8 to 10, 2022, and IUT Steel Research Center was awarded the title of "Mobarakeh Steel's Top Provider of R & D, and Technology".

The ceremony was attended by a group of officials from the Ministry of Industry, Mine & Trade, the Iranian Association of Steel Producers, other groups working for steel companies, and the media.

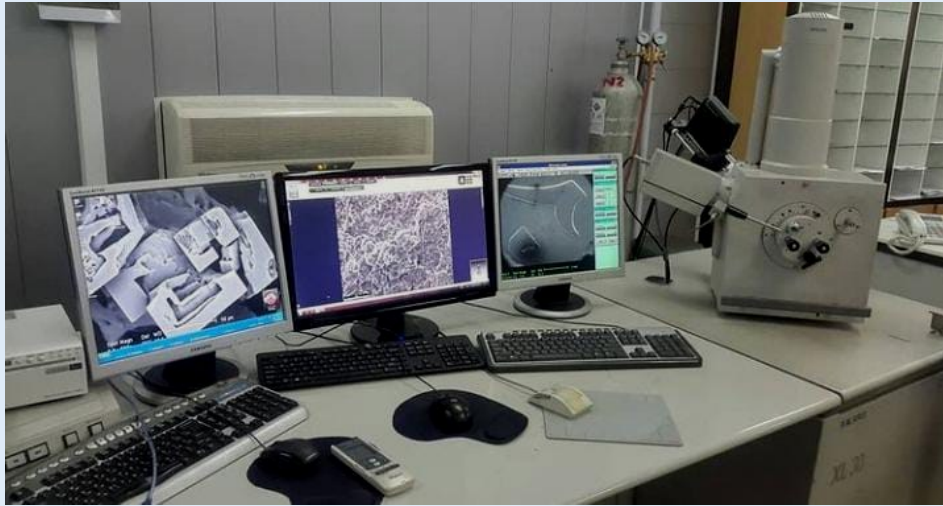
IUT Steel Research Center, in association with the holding company of Mobarakeh Steel Company (Mobarakeh and Hormozgan Steel Companies) and Isfahan University of Technology, strengthens the communication between science and technology centers with the country's steel industry and aims at creating innovation, development, and commercialization of strategic technologies in the Iranian steel industry. IUT Steel Research Center possesses offices in Isfahan University of Technology and Mobarakeh Steel Company in Isfahan that pursue the important goals of university-industry relations with efforts of 9 specialty working groups.





**An Introduction to Scanning Electron Microscopy (SEM)**

The Scanning Electron Microscope (SEM) is placed in the laboratory of Materials Engineering Dept. of Isfahan University of Technology which is the most common type of electron microscope in the world and what makes it different and considered as the best laboratory compared to other universities' laboratories in Iran is being completely qualified and equipped with all the essential detectors, preparation materials and equipment.



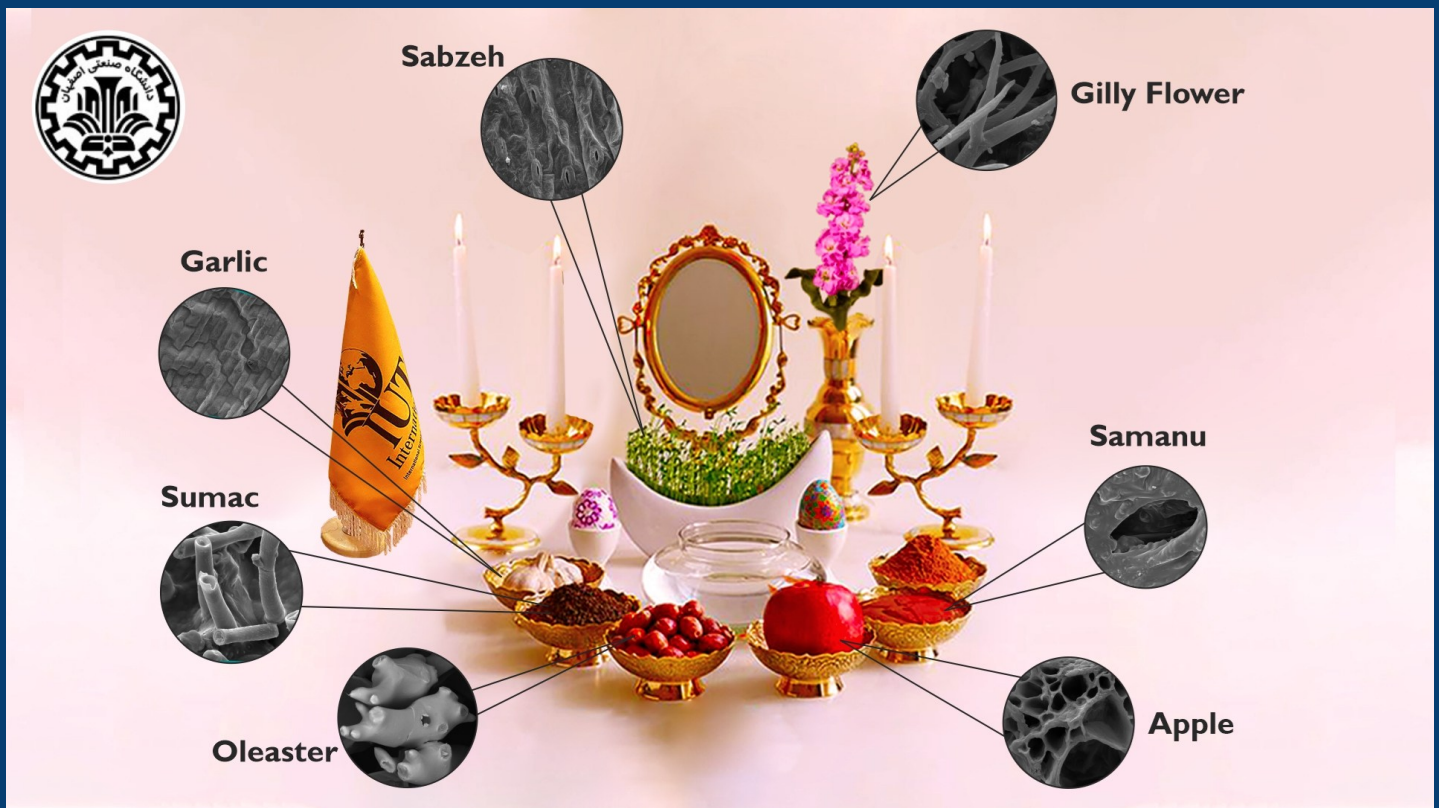
Besides, it uses a focused beam of high-energy electrons to generate a variety of signals at the surface of solid specimens. The signals that derive from electron-sample interactions reveal information about the sample including external morphology (texture), chemical composition, crystalline structure, and orientation of materials making up the sample. In most applications, data are collected over a selected area of the surface of the sample, and a 2-dimensional image is generated that displays spatial variations in these properties. Areas ranging from approximately 1 cm to 5 microns in width can be imaged in a scanning mode using conventional SEM techniques (magnification ranging from 20X to approximately 200,000X). The SEM is also capable of performing analyses of selected point locations on the sample; this approach is especially useful in qualitatively or semi-quantitatively determining chemical compositions (using EDS), crystalline structure, and crystal orientations.



\*Happy New Year and Nowruz!


The New Year in Iran starts with the beginning of spring and according to a beautiful and ancient Iranian tradition, they spread a symbolic tablecloth called Haftsin consisting of factors that express the wish of happiness, well-being, and blessing in the New Year.

A creative idea led us to make images of the seven mentioned elements prepared in the laboratory by the electron microscope, which all are very beautiful and interesting, especially the images of garlic, sumac, and oleaster. For this purpose, a thin section of the samples was prepared and after drying, with no change in their texture, the images were prepared by low voltage.



Microscopic Haft-Sin

### A Glorious Record for IUT in the Biggest National Operation Research (OR) Competition

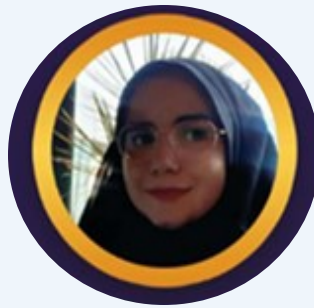
 Two teams, called OPTICED and SOC SPEEDY, from the Industrial and Systems Engineering Dept. of Isfahan University of Technology succeeded to win third place in the biggest national OR competition. This competition which is a modeling competition emulated INFORMS and Torch competitions held in Canada at three universities of Toronto, Concorde (Montreal), and Waterloo, is organized by the Industrial and Systems Engineering Dept. of IUT. The competition aimed to acquaint participants more familiar with real problems and also to challenge various skills in the field of modeling, optimization, and teamwork. The judging committee was composed of professors from the top universities in the country who accompany the competition. Besides, the sponsors of this competition were Mobarakeh Steel Company of Isfahan, IRISA, and TAKBON. For further information about OR Competition please visit: <https://orcompetition.ir>

#### OPTICED



**Kiana Sahba**

*Master student  
Department of Industrial  
and Systems Engineering*



**Zahra Mardani**

*Master student  
Department of Industrial  
and Systems Engineering*



**Motahare Sadat Akhlaghi**

*PhD student  
Department of Industrial  
and Systems Engineering*

#### SOC SPEEDY



**Morteza Naderi**

*Head of Sepahan Oil  
Company  
(Planning section)*



**Ali Mohammadi**

*PhD student  
Department of Industrial  
and Systems Engineering*



**Maryam Gholami**

*PhD student  
Department of Industrial  
and Systems Engineering*



## Opportunities

### Call for ICGEB Research Grants 2022



**ICGEB** International Centre for Genetic Engineering and Biotechnology

## ICGEB Research Grants 2022 CRP - Collaborative Research Programme

ICGEB offers a dedicated source of funding for outstanding projects in ICGEB Member States, with the goal of promoting collaboration, training of young scientists and the development of research facilities. The program provides support for research activities in basic life sciences, human healthcare, industrial and agricultural biotechnology and bioenergy.

Closing date for online submission: 30 April 2022 . [Read more...](#)

### IRAN (MSRT) - TURKEY (TUBITAK) Third Joint Research Projects Call

2535 TÜBİTAK-Iran (MSRT) Bilateral Cooperation Projects

CALL IS OPEN  
**FOR APPLICATION!**

APPLICATION DEADLINE  
**30 MAY 2022**



TÜBİTAK

Ministry of Science,  
Research and Technology



Joint academic research projects between the scientists of the two countries will be supported within the framework of the current Cooperation Protocol between TÜBİTAK and the Ministry of Science, Research and Technology (MSRT) of Iran.

Related call: Engineering; Information and Communication Technologies; Material Science; Energy; Cognitive Sciences; Science and Society; Agriculture and Biotechnology. It is also open to applications in the fields of Medical Sciences.

Detailed information on the bilateral cooperation call, which will remain open between 18 February 2022 and 30 May 2022, can be found on: <https://english.iut.ac.ir/node/627>



In order to expand the university's international Scientific interactions with overseas academic institutions, the IUT International is publishing this electronic Newsletter on international relations and in line with the IUT mission towards a Green University.

You are invited to register your email here to receive the new issue of the Newsletter upon its publication. You can also correspond with the editorial board from here to convey your valuable comments and suggestions to send materials related to IUT to be published in future issues of the Newsletter.

To see the previous issues and more information on the newsletter, please click here.

In addition to being distributed via social networks, this Newsletter will also be available through the following QR code. Your constructive participation in this path will guide us toward our goals.



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Your constructive and valuable comments and suggestions are most welcome.

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