

2. Засядько. URL: [https://uk.wikipedia.org/wiki/Засядько\\_Олександр\\_Дмитрович](https://uk.wikipedia.org/wiki/Засядько_Олександр_Дмитрович)
3. Кибальчич Микола Іванович. URL: [https://uk.wikipedia.org/wiki/Кибальчич\\_Микола\\_Іванович](https://uk.wikipedia.org/wiki/Кибальчич_Микола_Іванович)
4. К. Е. Ціолковський батько космонавтики. URL: [https://uk.wikipedia.org/wiki/Ціолковський\\_Костянтин\\_Едуардович](https://uk.wikipedia.org/wiki/Ціолковський_Костянтин_Едуардович)
5. Місячна траса Юрія Кондратюка. URL: [https://www.ukrinform.ua/rubric-other\\_news/2254054-najoptimalnisu-trasu-polotu-do-misaca-obrahuvav-nas-spivviticznik.html](https://www.ukrinform.ua/rubric-other_news/2254054-najoptimalnisu-trasu-polotu-do-misaca-obrahuvav-nas-spivviticznik.html)
6. Місячна траса Юрія Кондратюка. URL: [https://uk.wikipedia.org/wiki/Траса\\_Кондратюка](https://uk.wikipedia.org/wiki/Траса_Кондратюка)
7. Наш земляк В. І. Вознюк та його роль у космонавтиці URL: Режим доступу: [https://uk.wikipedia.org/wiki/Вознюк\\_Василь\\_Іванович](https://uk.wikipedia.org/wiki/Вознюк_Василь_Іванович)
8. Генеральний конструктор ракетно-космічних систем С.П. Корольов. URL: [https://uk.wikipedia.org/wiki/Корольов\\_Сергій\\_Павлович](https://uk.wikipedia.org/wiki/Корольов_Сергій_Павлович)
9. Космічні здобутки незалежної України URL:
10. Україна планує запустити вісім супутників на орбіту до 2025 року. URL: <https://gordonua.com/news/science/ukraina-planiruet-zapustit-do-2025-goda-vosem-sputnikov-glava-goskosmosa-1590182.html>
11. Україна та Канада приступають до будівництва космопорту. URL: <https://censor.net/ru/n3309190>.

### UKRAINE ROCKET

**Mykola Chernenko** - a member of the Vinnytsia OCTTUM.

*The historical and modern role of my compatriots and my homeland in the development of the theory of space flights, rocket and space technology and space exploration is considered.*

**Key words:** space, rockets, design, orbits, astronomy.

### AVIATION, ROCKET SPACE AND ASTRONOMICAL VINNYTSIA Story for my English-speaking friends

**Anna Terentieva** - member of the astronomical circle of Vinnytsia OCTTUM, a student of the 11th grade of Vinnytsia Humanitarian Lyceum №1 named after Mykhailo Ivanovych Pyrohov

*This work is discovered about events and people who played a significant role in the development of astronomy, aeronautics and astronautics. They took place, were born, lived or worked in the center of Podillya, in Vinnytsia region. The story in English will help English-speaking people to gain knowledge about Vinnytsia on this interesting space topic, and Ukrainians will learn more about their motherland and improve their English or communicate with it on the topic I covered.*

**Key words:** astronomy, asteroid, astroblema, rocket space, aviation, comet, scientific research.

Ukraine is a space country!

Ukrainians constantly participate in international programs, develop and manufacture space vehicles.

We have lots of things to be proud of!

Ukraine has established itself as a space power at the very origins of astronautics as such. Our compatriots still achieve significant success today. I am proud to say that the city in which I live is a vital part of our space state!

### Names of Vinnytsia residents on the map of the Universe



Cosmic bodies named after the people of Vinnytsia revolve around the Sun. They all rotate in the main belt of asteroids, between Mars and Jupiter. The names of five asteroids are connected with Vinnytsia region.

Three of them namely 13904 Univinnitsia, 2506 Pirogov and 13906 Shunda were discovered at the Crimean Astrophysical Observatory in the village of Scientific [1].

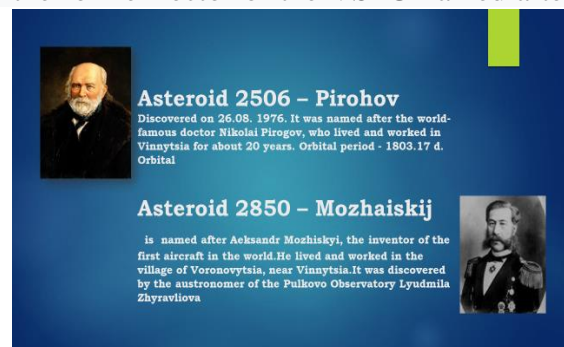
**Asteroid 13904 - UNIVINNITSIA** was discovered on 03.10. 1975, and named after Vinnytsia State Pedagogical University named after Mykhailo Kotsyubynsky (Fig. 1).

Since 12 April, 2012, it takes place at the VSPU, named after Mykhailo Kotsybybskyi dedicated to the World Aviation and Astronautics Day. It is attended by students and teachers of Ukrainian universities, as well as by us young-astronomers of the Academy of Sciences of Ukraine [2].



**Asteroid 13906 - SHUNDA** – is named after the former rector of the VSPU named after Mykhailo Kotsyubynskyi Nikifor Shunda, who headed this institution for 29 years. It was discovered on August 20, 1977 (Fig. 2) [3].

**Asteroid 2506 – PIROHOV** was discovered on 26.08. 1976. It was named after the world-famous doctor Nikolai Pirohov, who lived and worked in Vinnytsia for about 20 years. The orbital period is 1803.17 d. Orbital inclination – is 2, 16°. Its magnitude is + 11.8 (Fig. 3) [4].



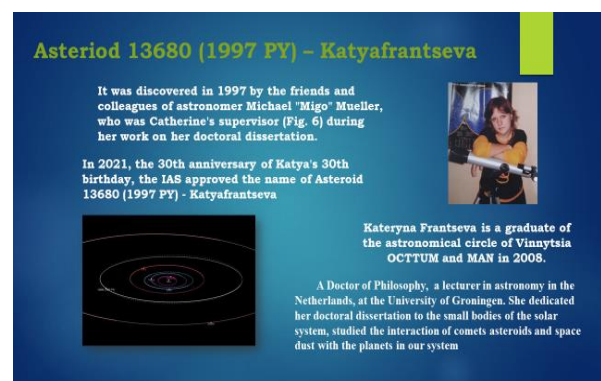
**Asteroid 2850 – Mozhaiskij** was named after Alexander Mozhaiskij, the inventor of the first aircraft in the world. The scientist lived and worked in the village of Voronovytisia, near Vinnytsia. The asteroid was discovered by the astronomer of the Pulkovo Observatory Lyudmila Zhuravlyova (Fig. 4) [5].

**Asteroid 13680 (1997 PY) Katyafrantseva**  
It was discovered in 1997 by the friends and colleagues of astronomer Michael "Migo" Mueller, who was Catherine's supervisor (Fig. 5) of her doctoral dissertation.

I am proud to say, that Kateryna Frantseva is a graduate of the astronomical circle of Vinnytsia OCTTUM and MAN in 2008.

A Doctor of Philosophy, a lecturer in astronomy in the Netherlands, at the University of Groningen. She dedicated her doctoral dissertation to the small bodies of the solar system, studied the interaction of comets, asteroids and space dust with the planets in our system.

In 2021, to commemorate the 30th anniversary of Katya's birthday, the IAS approved the name of Asteroid 13680 (1997 PY) - Katyafrantseva (Fig. 6) [6].



### **Ilyinets astroblema - is a geological phenomenon of Vinnytsia region**

Ilyinets astroblema is a unique crater in Podolia, which was formed there about 400 million years ago as a result of a collision between the nucleus of a comet or asteroid with the solid rocks that make up the Ukrainian Crystal Shield [7].



According to scientists, this space body weighed about 40 million tons and could reach 300 -400 m in diameter weighed about 40 million tons and could reach 300 -400 m in diameter.

Vinnytsia was chosen as a venue for KAMMAK conferences, in particular because the oldest star found in Europe, the astroblema, is located nearby.

The initial diameter of the crater was about 7 km, its depth is up to 800 m.9 (Fig.7) [8].

In the photo you can see A. A. Walter explaining the origin of the impact diamonds to the student of our Lyceum Bohdan Danilchuk during “KAMMAK” (Fig. 8)

It is impossible not to tell you about one of the most interesting places of my town – the planetarium.

### **The Planetarium is a center for the astronomical and space knowledge promotion**

There are only 5 stationary planetariums in Ukraine, and one of them works in Vinnytsia. Here the stars become closer, and the unlimited universe reveals its secrets to us. Here you can admire the starry sky during the day and in any weather (Fig. 9).



September 2015. The first cosmonaut of independent Ukraine Leonid Kadenyuk congratulates Vinnytsia residents on the 50th anniversary of Vinnytsia Planetarium (Fig. 10).

The optical-mechanical device "Planetarium" will help you to touch the stars. Planetarium sessions are a set of popular scientific and popular science programs and entertainment programs in astronomy and science that will interest children and adults.

The pherical films are also shown in foreign

languages (English, Polish, etc.)

### **My native city«Space» squares, fountains and murals**

One of the central squares of our city is named after the world's first astronaut Yuri Gagarin. Although Yurii Haharin has never been to our city, he is its Honorary Citizen.

On Cosmonauts Avenue. People call it simply " The Plane". It was opened in 1969. An astronaut Georgy Timofeiochich Berehovyi, a native of Ukraine, was invited to the ceremony in March 1944 he commanded a squadron of the aviation regiment, which liberated Vinnytsia (Fig. 11).

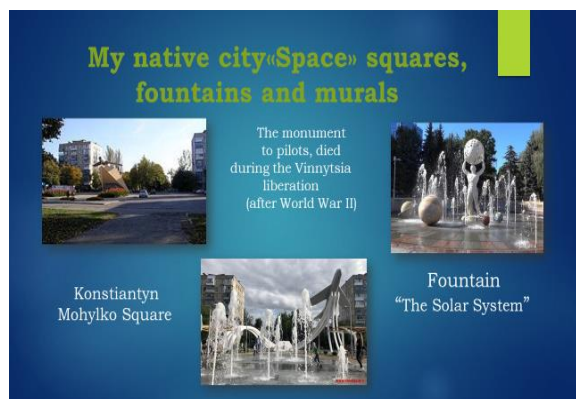
October, 1968, Georgy Timofeevich successfully piloted the Soyuz-3 spacecraft, for which he was awarded the second Gold Star medal of the Hero of the Soviet Union.

Berehovyi (1921 - 1995) is a cosmonaut pilot, a liberator and an honorary citizen of Vinnytsia

This project with a real combat aircraft, which seems to take off into the sky from the pedestal, was made by an architect Roman Marchel [9].



50 years later, the concrete pedestal was replaced with a metal one, and the area around it was named after the pilot - Hero of Ukraine Konstantyn Mohylko, who died on 6 June, 2014 in the anti-terrorist operation zone (Fig. 12).



Cosmonauts Avenue, which adorns the picturesque area with a delicious name Vyshenka is one of the most favorite resting places of Vinnytsia residents and guests. In 2017 that a unique art object The Solar System Fountain appeared (Fig. 13).

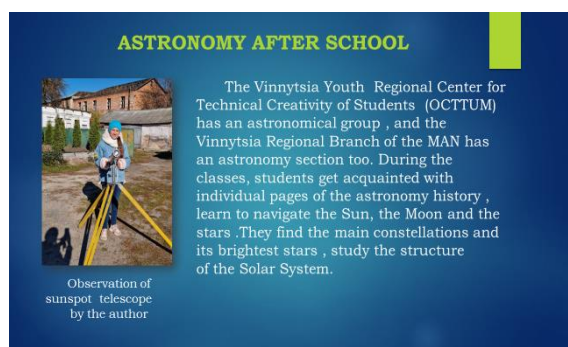
There is a sculpture of Athlas holding the Sun (openwork, lattice, almost airy design in the center of the composition..There are Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune and Pluto around it [10].

At dusk, the backlight turns on, that creates an incredible effect! The author of the idea is the architect Natalia Kotoshchuk. The planetary system was directly made by the artist - restorer Alexander Bokov. Atlanta was created by the sculptor Vladimir Ovrakh

In 2021 in Vinnytsia, on Cosmonauts Avenue, 39 the mural "Space Dreams" was completed. The mural was created as part of the VIN ART CITY project. In total, 5 space-themed murals will appear in Vinnytsia. In common, 5 space-themed murals will appear in Vinnytsia later.

The wall of the high-rise depicts an astronaut holding planets in the Solar System that come together like balloons [11].

In a such way- clearly young, talented and hard-working Vinnytsia residents are trying to decorate our lives and draw attention to the eternal and mysterious space. The mural reflects the lofty dreams and thoughts of the modern youth.



My story would not be complete if I did not say that: the Vinnytsia Youth Regional Center for Technical Creativity of Students (OCTTUM) has an astronomical group, and the Vinnytsia Regional Branch of the MAN has an astronomy section too. During the classes, students get acquainted with individual pages of the astronomy history learn to navigate the Sun, the Moon and the stars. They find the main constellations and its brightest stars, study the structure of the Solar System (Fig. 14).

We take part in various quizzes, brain-rings, excursions, entertainments and competitions, prepare for regional and All-Ukrainian competitions, observe the starry sky with a telescope and with the help of virtual programs.

During the classes, students get acquainted with individual pages of the history of astronomy, learn to navigate the Sun, Moon and navigation stars, find the main constellations and the brightest stars in them, study the structure of the solar system.

Pupils of the circle receive the appropriate competencies to prepare research projects on astronomical and space topics.

Astronomical conferences and competitions for circles and deceivers are the steps of our success, our formation, involvement in science and self-affirmation.

In order to learn the astronomical and cosmic events of the past, to make real plans for the future, you need to know the basics of astronomy and astronautics, information technology, geography and geology, logistics, tourism and souvenir business, rights, virtues, etc., and the main native and English languages - the basics of learning and communication.

The novelty of my work is that no one before me described the astronomical and space events of Vinnytsia in two languages at once: in my native Ukrainian and in the language of international communication - English.

Unfortunately, it is a war in Ukraine. But I believe that when it ends with our victory, my Vinnytsia will be an aviation, rocket space and astronomical city!

#### Список використаних джерел:

1. Список астероїдів, назви яких пов'язані з Україною. URL: [https://uk.wikipedia.org/wiki/Список\\_астероїдів,\\_назви\\_яких\\_пов'язані\\_з\\_Україною](https://uk.wikipedia.org/wiki/Список_астероїдів,_назви_яких_пов'язані_з_Україною).
2. **13904 Унівінниця**. URL: [https://uk.wikipedia.org/wiki/13904\\_Унівінниця](https://uk.wikipedia.org/wiki/13904_Унівінниця)
3. **13906 Шунда**. URL: [https://uk.wikipedia.org/wiki/13906\\_Шунда](https://uk.wikipedia.org/wiki/13906_Шунда)
4. **2506 Пирогов**. URL: [https://uk.wikipedia.org/wiki/2506\\_Пирогов](https://uk.wikipedia.org/wiki/2506_Пирогов)
5. 2850 – Можайський. URL: [https://uk.wikipedia.org/wiki/2850\\_Можайський](https://uk.wikipedia.org/wiki/2850_Можайський)
6. Катя Францева. URL: <https://hromadske.ua/posts/kosmichnij-pil-kometi-j-ceglinki-zhittya-chomu-hvilyuyetsya-katerina-franceva-na-chest-yakoyi-nazvali-asteroyidhttps>
7. Іллінецький кратер. URL: [https://uk.wikipedia.org/wiki/Іллінецький\\_кратер](https://uk.wikipedia.org/wiki/Іллінецький_кратер)
8. Ударні кратери на території України. URL: <https://planet.org.ua/new/udarni-krateri-na-teritoriyi-ukrayini/>
9. Народний музей почесних громадян м. Вінниці – Вінниця: Консоль, 2005. – Б/н.
10. Про фонтан Сонячна система у Вінниці. URL: [http://moreinfo.ua/ua/vinnica/\\_place/fontan\\_-\\_solnechnaja\\_sistema](http://moreinfo.ua/ua/vinnica/_place/fontan_-_solnechnaja_sistema)
11. На проспекті Космонавтів завершили мурал «Космічні мрії». URL: <https://www.vinnitsa.info/news/na-prospekti-kosmonavtiv-zavershyly-mural-kosmichni-mriyi-foto.html>

### ВІННИЧЧИНА АСТРОНОМІЧНА ТА АЕРОКОСМІЧНА, розповідь англomовним друзям

**Anna Terentieva** - a member of the astronomical circle of Vinnytsia OСТТУМ.

*В роботі йдеться про події та людей які зіграли визначну роль у розвитку астрономії, повітроплавання та космонавтики. Вони відбувалися, народились чи жили або творили в центрі Поділля, на Вінниччині. Розповідь англійською допоможе англomовним людям отримати знання про Вінниччину на цю цікаву космічну тематику, а українцям більше дізнатися про рідний край та вдосконалити англійську чи поспілкуватися нею на висвітлену мною тему.*

**Ключові слова:** астрономія, астероїд, астроблема, astronomy, asteroid, astroblema, ракетний космос, авіація, комета, наукові дослідження.

### ЛІНІЯ КАРМАНА

**Вікторія Вештак**, вихованка астрономічного гуртка ОСТТУМ, учениця 9 класу Вінницького ліцею №30 імені Тараса Шевченка

*У статті йдеться про вивчення лінії Кармана та її відкриття Теодором фон Карманом. Про те, що собою являє ця умовна лінія між атмосферою Землі та космосом та в чому її значення.*

**Ключові слова:** лінія Кармана, Теодор фон Карман, атмосфера, політ, супутник.



Поглиблено вивчаючи астрономію дізнаюся, які бар'єри потрібно здолати щоб дістатись до космосу, про особливості фізичних умов на інших космічних тілах та можливість життя на них, аналізую особливості існування умовної лінії, яка розділяє атмосферу Землі та космосу, а також можливості існування подібної на інших тілах Сонячної системи. Мене вразила можливість умовного визначення та значення цієї