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DIVISION F PLANETARY SYSTEMS AND ASTROBIOLOGY

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DIVISION F COMMISSIONS

Commission F1	**Meteors, Meteorites and Interplanetary Dust**
Commission F2	**Exoplanets and the Solar system**
Commission F3	**Astrobiology**
Cross-Division A-F Com. X2	**Solar System Ephemerides**

DIVISION F WORKING GROUPS

Division F WG	**Near Earth Objects**
Division F WG	**Planetary System Nomenclature (WGPSN)**
Division F WG	**Small Bodies Nomenclature (SBN)**
Inter-Division A-F WG	**Cartographic Coordinates & Rotational Elements**
Inter-Division E-F-G WG	**Impact of Magnetic Activity on Solar and Stellar Environments**

TRIENNIAL REPORT 2018-2021

1. Background

In 2015 there was a reorganization of Divisions and Commissions in the IAU. The former Division III "Planetary Systems Sciences", became Division F "Planetary Systems and Bioastronomy". Lately, in 2018, the Division F was renamed to "Planetary Systems and Astrobiology", reflecting the more popular name of this growing research field.

The Division F is focused on the study of the solar and extrasolar planetary systems, their constituents and astrobiology. In particular, the members carry on observational, experimental and theoretical studies of a large variety of bodies; like: meteors, meteorites, interplanetary dust, asteroids/minor planets, comets, transneptunian objects (TNOs),

satellites, planets, exoplanets, planetary systems, and large set of topics in the interdisciplinary astrobiology field. Within the Division, there are 3 Commissions (4 in the next triennum) and very active Working Groups that are responsible for the nomenclature of the surface features of solar system bodies, and the small body nomenclature; and closer in time with the nomenclature of exoplanets and their hosting stars.

2. Planetary Sciences and Astrobiology in the triennium 2018-2021

The Planetary Sciences and Astrobiology community has been steady growing in the last couple of decades. In the following sections, we will show several indexes indicating the increase of activity in these research fields.

2.1. *Membership*

IAU has at present (March 2021) 2354 individual members affiliated to Division F. In addition, in 2018 the IAU introduced the category of Junior members, for scientist that are in the initial phase of their professional research career. Division F has at present 143 Junior members; totaling almost 2500 members in the Division. The number of members has been steady increasing compared to the previous trienniums, as it is shown in Fig. 1.

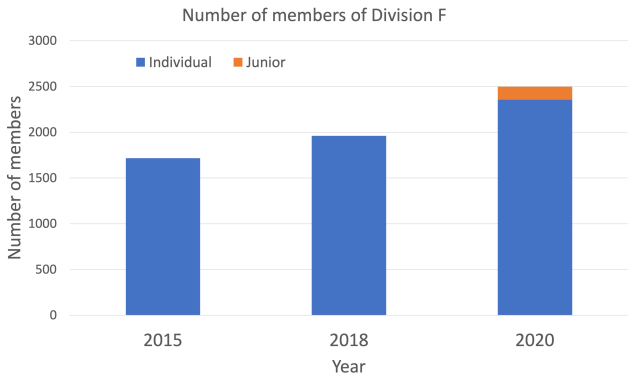

Figure 1. Number of members of Division F at the last two IAU GA (2015, 2018) and at present. Note that the Junior category was introduced in 2018. (Data taken from the IAU and processed by the author.)

2.2. *Publications*

A measure of the productivity of a scientific community is the number of refereed articles that has been published in recent years. Using the ADS database, we analyze the number of publications according to several keywords in the last three complete trienniums. The keywords correspond to the different objects of study in the fields of Planetary Sciences and Astrobiology. The list of keywords might not be complete, and in some cases there might be some overlap. Nevertheless, the growing trend in the number of publications in most of the subfields is notable. The increase of publications about Asteroids and Exoplanets in the last triennium is striking.

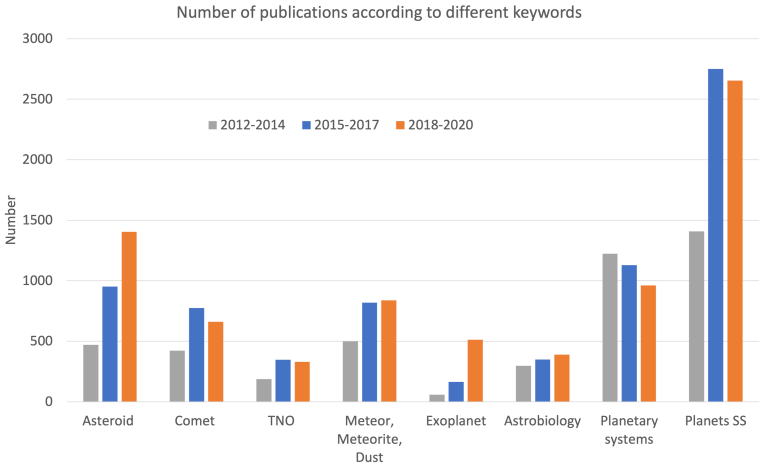

Figure 2. Number of refereed publications in the last three complete trienniums according to several keywords. Note: i) only refereed publications under the "astronomy" collections were included, ii) in some cases we sum up the results of several keywords, e.g. TNO = transneptunian + Kuiper + Pluto. (Data taken from the ADS `https://ui.adsabs.harvard.edu/` and processed by the author.)

2.3. *Discoveries*

A large part of the Planetary Sciences community is involved in the observation of several type of planetary objects. An object to be observed must first have been discovered. The increase in the discovery rate of minor planets and exoplanets in the last decades is fascinating. By March 2021, there are over 1 million discovered asteroid, including almost 550.000 with enough observations to be able to compute a secure orbit and to be numbered. The number of confirmed exoplanets is close to 5000 (depending on the source and the criteria to be considered as a confirmed case).

The diversity of worlds is a key issue in the Astrobiology research. In the last few years, several Earth-size planets have been discovered in the habitable zones of small stars; and several papers have been written about the feasibility to develop life on them.

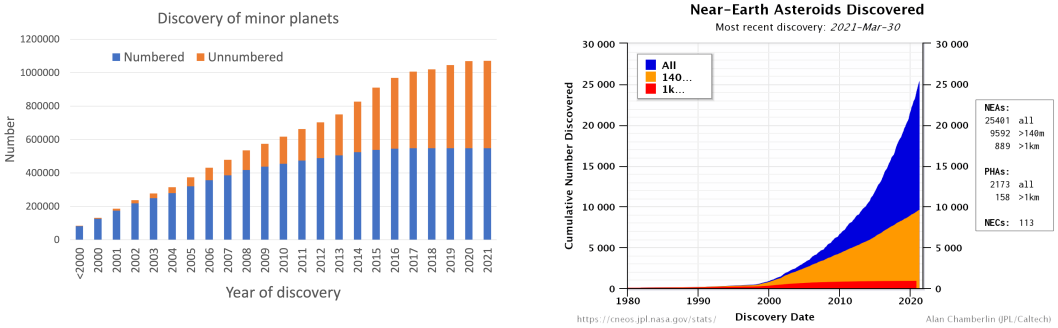

Figure 3. Number of minor planet discoveries. *i)* Cumulative number of numbered and unnumbered discoveries per year. It includes asteroids and TNOs of all types. (Data taken from the MPC `https://minorplanetcenter.net` and processed by the author.) *ii)* Cumulative number of Near-Earth Asteroids discoveries per year . (Plot taken from CNEOS/JPL/NASA `https://cneos.jpl.nasa.gov/`.)

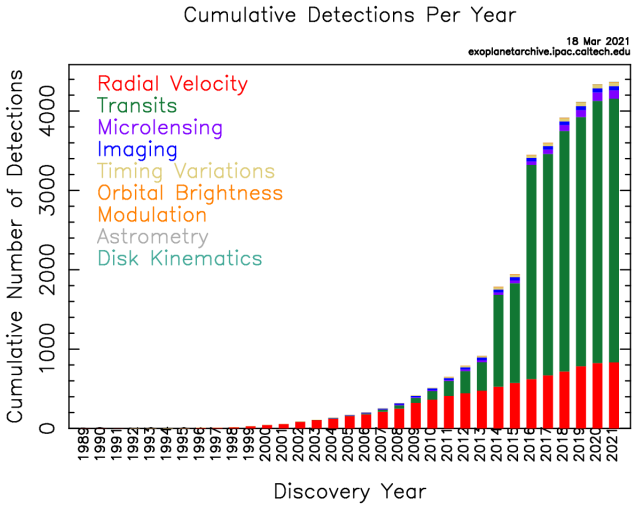

Figure 4. Cumulative number of exoplanet detections per year by different discovery methods (Plot taken from NASA Exoplanet Archive`https://exoplanetarchive.ipac.caltech.edu/`)

2.4. *Space missions*

Compared to the study of other astronomical objects, Planetary Sciences has the advantage that we can visit our targets with robotic missions. In some cases, we can deploy instruments working for months or years, and we can take samples and return them back to Earth.

The early part of 21st century has seen the re-flourishment of the planetary exploration, with tens of space missions involving several space agencies. Hereby is a short description of some recent and on-going space missions, as well as some planned ones for the next years. (Source of the information Planetary Society `https://www.planetary.org/space-missions`.)

Used acronyms: CNSA - China National Space Administration; ESA - European Space Agency; JAXA - Japan Aerospace Exploration Agency ; NASA - National Aeronautics and Space Administration.

Mercury

ESA and JAXA launched in 2018 the BepiColombo mission to Mercury, which is expected to arrive in 2025.

Venus

JAXA has the mission Venus Climate Orbiter Akatsuki orbiting the planet since 2015. The main objetive is the study of the venusian atmosphere.

Moon

CNSA had two lunar missions in this triennium: Chang'e-4 performed the first landing on the Moon's far side in 2018, and Chang'e-5 returned lunar samples to Earth in 2020. India's Chandrayaan-2 orbiter maps the Moon's topography. NASA's Lunar Reconnaissance Orbiter, launched in 2009, still provides relevant data for planning future exploration missions.

Two other agencies are planning space missions to the Moon in the coming years: the Korean Pathfinder Lunar Orbiter (planned for 2022) and the Israeli non-profit SpaceIL plans to launch the mission Beresheet2 in 2024.

The NASA's Artemis program has plans to return humans to the Moon in the coming years.

Mars

Mars has a plethora of on-going and planned space missions. In fact, in February 2021, three missions of three different space agencies arrived at the planet.

NASA had several missions orbiting the planet and exploring its surface. The orbiters: Odyssey to monitor the surface changes; Mars Reconnaissance Orbiter to study the climate and geology and to relay communications between the surface and Earth; and MAVEN to study the martian atmosphere. The landers ans rovers: InSight lander to study the interior, Curiosity rover to search for evidence that the planet could once have supported life. In February 2021, the Perseverance rover landed. It will search for past life and collect samples to return to Earth. The mission includes the drone Ingenuity, the first human artifact to fly in an atmosphere outside the Earth.

ESA has ExoMars Trace Gas Orbiter, searching for atmospheric gases linked to life; and the orbiter Mars Express searching for subsurface water.

CNSA put Tianwen-1 into orbit around Mars in Feb. 2021, and they will land a rover later this year.

The third mission to arrive on Mars in 2021 was the United Arab Emirates' Hope orbiter; the objective is to study the atmosphere. India's Mangalyaan orbiter is a technology demonstration mission orbiting the planet since 2014.

In 2024 there are plans to launch together the Russia's Kazachok lander and ESA's Rosalind Franklin rover, to search for signs of life. JAXA has plans to visit and to collect samples of the martian satellite Phobos with the Martian Moons eXploration to be launched in 2024.

Small bodies

As the case of martian missions, the number of space probes visiting small bodies of the Solar System is large.

The NASA's New Horizons mission flew by Pluto and Charon in 2015, and 2014 MU69 = (486958) Arrokoth in 2019. Now, it continues its journey in the transneptunian region and it might have the chance of another fly-by.

Two asteroids of a similar diamond shape were visited in 2018-2019: the JAXA mission Hayabusa2 visited asteroid Ryugu; and the NASA mission OSIRIS-REx visited asteroid Bennu. Both missions collected samples of surface material to be send back to Earth. Hayabusa2 have already returned the sample to Earth in 2020, and now is on a journey to visit two more asteroids in 2026 (2001 CC21) and 2031 (1998 KY26). OSIRIS-REx will return the samples in 2023.

NASA launched in 2009 the Wide-field Infrared Survey Explorer (WISE) to scan the sky in the thermal infrared. After exhausting the hydrogen to cool the detectors, the spacecraft was reactivated as NEOWISE in 2013, to hunt for dangerous asteroids. NEOWISE has been very successful in discovering thousands of asteroids, in particular over 300 NEAs. The successor, the NASA's NEO Surveyor mission, is still pending final approval.

NASA has also two other planned space missions to study asteroids: Lucy, to be launched in 2021, to explore several asteroids that share Jupiter's orbit (Trojan asteroids); and Psyche, to be launched in 2022, to visit the same-named metallic-type asteroid, that may be considered as the core of an ancient larger body.

In addition to the scientific research on the small bodies, there is a big concern of the public and the scientists about the potential risk of impact by these bodies. Under the planetary defence programs of the space agencies, there are missions planned to test

the deflection techniques necessary to prevent a potential threat. NASA plans to launch in 2021 the DART mission, that will crash into the satellite Dimorphos, of the asteroid Didymos, in 2022. The objective is to measure the deflection caused by a direct impact. The Italian cubesat LICIA Cube will be released by DART, some time before impact, to have a set of images of the event. Optical ground-based telescopes will monitor the objects to measure the deflection. In 2024, ESA will launch the Hera mission to study the Didymos-Dimorphos system.

Jupiter

The NASA's mission Juno entered in Jovian orbit in 2016. The objective is to study Jupiter's composition, the gravitational and magnetic field, and to help us understand how giants planets are formed. The Juno mission has been extended to 2025 and in the extended mission the spacecraft will study the Galilean moons as well as the planet.

The ESA's mission JUpiter ICy moons Explorer - JUICE is planned for launch in 2022 and arrival at Jupiter in 2029. It will explore Jupiter and its icy moons Europa, Callisto, and Ganymede.

Saturn, Uranus and Neptune

The only approved mission to go back to these outer planets, after the extraordinary NASA?s Voyager 1&2 missions and the NASA/ESA Cassini-Huygens to Saturn, is the NASA?s Dragonfly mission planned for launch late this decade to explore Saturn?s moon Titan.

Exoplanets

At present there are two space missions devoted to the search and characterization of exoplanets: NASA's Transiting Exoplanet Survey Satellite (TESS) and ESA's CHaracterising ExOPlanet Satellite - CHEOPS. TESS was launched in 2018, it has discovered 120 confirmed exoplanets, and over 2500 candidates (March 2021). CHEOPS was launched in 2019, it is a mission dedicated to searching for exoplanetary transits on bright stars already known to host planets. It has already discovered several exo-planetary systems.

The general purpose NASA's James Webb Space Telescope, to be launched in 2021, will be useful for characterization of some exoplanets. The NASA's Roman Space Telescope (2025) and the ESA's PLAnetary Transits and Oscillations of stars - PLATO (2026) will be the next steps in searching of exoplanets from space.

In addition to the space missions, the planetary sciences research has been benefited by several sky surveys, like ESA's astrometric satellite Gaia, and the ground based telescopes: Pan-STARRS in Hawaii and the Catalina Sky Survey in Arizona. The Vera Rubin Observatory, previously known as the Large Synoptic Survey Telescope (LSST), will increase the number of small bodies by a large factor.

3. Awards

Some members of the Planetary Systems and Astrobiology community have received important awards during this triennium.

Michel Mayor and Didier Queloz obtained the Nobel Prize in Physics 2019 "for the discovery of an exoplanet orbiting a solar-type star." It is the first time that a Nobel Prize is awarded for a discovery in Planetary Sciences. Their discovery has set the path to the ever-growing field of exoplanets, which is nowadays one of the driving forces of our Division. Mayor and Queloz have been actively participating in the IAU, leading the Exoplanets Commission. On behalf of the entire Division, a warm greeting was sent to Mayor and Queloz in occasion of the Nobel Prize ceremony in December 2019.

Martin Turbet (France) was one of the two recipients in 2019 of the grant provided by

The Gruber Foundation (TGF) Fellowship Programm, with the auspice of the IAU. The title of the awarded thesis was: "Habitability of planets using numerical climate models. Application to extrasolar planets and early Mars".

The Division F selected the following young scientists for the IAU PhD Prize:

• 2018: Tim Lichtenberg (Switzerland) received his PhD in 2018 from the ETH Zurich, with the thesis "Thermal Evolution of Forming Planets: Isotope Enrichment, Differentiation & Volatile Retention". By modeling the early evolution of planetary systems, he demonstrated a great capacity for interdisciplinary research, especially combining geochemistry, cosmochemistry and astrophysics.

• 2019: Przemyslaw Mroz (Poland) received his PhD in 2019 from the Astronomical Observatory, University of Warsaw, with the thesis "Astrophysical applications of gravitational microlensing in the Milky Way". The thesis focuses on searching for and constraining the frequency of rogue planets in the Milky Way using data from the OGLE survey.

• 2020: Jane Huang (United States) received her PhD in 2020 from Harvard University, with the thesis: "Rings and Spirals in Protoplanetary Disks: The ALMA View of Planet Formation". In her thesis, she made use of the Atacama Large Millimeter/Submillimeter Array (ALMA) to produce deep images of dust, gas and chemical structures in planet-forming disks at very high resolution.

In 2020, the IAU PhD at-large Prize, given among applicants from all Divisions, was awarded to a candidate from Div. F: Raissa de Lourdes Freitas Estrela (Brazil). Freitas received her PhD from Mackenzie Prebysterian University (Sao Paulo, Brazil), with the thesis: "Exoplanets Atmospheres and Habitability". She studied the atmospheres of exoplanets and their habitability in different scenarios. Her thesis was an excellent example of multidisciplinary work.

4. Division activities

4.1. *Outreach and conference participation*

Several materials have been prepared for popularization.

In the frame of the IAU100's celebration of the 50th anniversary of the moon landing, we wrote a short essay about the contribution of the Apollo Moon program to the understanding of the origin of the Earth-Moon system.

In support of the actions of the IAU Press Office, the Division collaborated in the following IAU announcements:

• Naming of new interstellar visitor: 2I/Borisov
`https://www.iau.org/news/pressreleases/detail/iau1910/`

• Naming of (486958) 2014 MU69, nicknamed Ultima Thule, officially named Arrokoth
`https://www.iau.org/news/announcements/detail/ann19001/`
`https://www.iau.org/news/announcements/detail/ann19067/`

• Name an Exoplanet - results of the NameExoWorlds campaign
`https://www.iau.org/news/pressreleases/detail/iau1912/`

• First official names given to features on asteroid Bennu
`https://www.iau.org/news/pressreleases/detail/iau2002/`

• Approval name of target of first NASA and ESA planetary defence missions
`https://www.iau.org/news/pressreleases/detail/iau2007/`

The Division F was represented at the following conferences:

• 6th IAA Planetary Defense Conference (29 April - 3 May 2019, College Park, MA,

USA) organized by International Academy of Astronautics. We expressed the importance of this conference series for the Division.

• Latino-American Regional IAU Meeting (3-9 November 2019), Antogafasta, Chile. We promoted the participation of young latino-american astronomers in the Division.

• Minor Planet Center User's Group - MUG (2-3 December 2020), Virtual meeting. We made a presentation about the role of the IAU in naming small bodies.

• 12th Steering Committee Meeting of the International Asteroid Warning Network (IAWN) (30-31 March 2021), Virtual meeting. We made a presentation about the IAU activities related to Near-Earth Objects.

4.2. *Division matters*

The Div. F SC discussed the possible actions to take in the event a new planet is discovered in our Solar System. The discussion also included the presidents of the WGSBN and WGPSN. Two issues were addressed: a) a naming process in case a new planet is discovered; b) specifications or a metric for the IAU planet definition. The majority of the Div. F SC thought that it is too premature to discuss a possible process to define a name, when there are not definitive and indisputable evidences that planet beyond Neptune can exist yet. However, some ideas were exchanged on how this process could be. In addition, we recognize that a clear metric for the IAU 2006 planet definition should be adopted. What are the precise limits between planets, "dwarf planets" and Small Solar System Bodies? There are several TNOs that fulfils the criterion for "dwarf planets", in addition to the 4 already classified. Shall we proceed with their classification? The topic is still open.

As mentioned above, a few of designations of minor bodies by the WGSBN and planetary features by the WGPSN had made into the IAU announcements and press releases. There are some remarks regarding those decisions. The WGSBN promptly accepted the proposal for naming the New Horizon's target (486958) 2014 MU69 as "Arrokoth", in order to avoid confusion in publications with the nickname previously used "Ultima Thule". In August 2019, an object with cometary appearance was discovered by amateur astronomer G. Borisov. The object was initially designated as C/2019 Q4 (Borisov). After some observations, the interstellar origin of the orbit was definitively confirmed. The object could then be incorporated into the recent new category of interstellar objects (I/), inaugurated with 1I/'Oumuamua. But, differently to the previous case, since this object had a cometary nature and it had already a provisional comet designation which included the discoverer's name, the WGSBN decided to designate the new object as 2I/Borisov.

2019 was a special year for the IAU for the celebration of its 100th anniversary. One of the central activities of the IAU100 program was the Name ExoWorlds contest. The IAU National Committees and the National Outreach Coordinators in each country received naming suggestions from the public for an exoplanet and the respective host star. A short list of selected names by each country were submitted to the NameExoWorlds Steering Group, chaired by two Div. F. members: A. Lecavalier des Etangs and E. Mamajek. In December 2019 the official names of 113 stars and the corresponding exoplanets were announced.

Under the auspice of Commissions F1 and F3, the following triennial international conferences have been frequently organized: "Meteoroids" and "Astrobiology", respectively. A series of similar conferences is being organized without the auspice of any specific commission, because of the lack of one, namely the "Asteroids, Comets & Meteors", which in the future could be connected to the new Commission F4. At the last EC 104, we proposed the IAU should have some kind of support for these conferences series; since they

cannot be considered as regular IAU Symposia, but they should be under the umbrella and support of the IAU.

The Division had accepted the invitation to be part of the Working Group "Impact of Magnetic Activity on Solar and Stellar Environments", which was under Div. E. Now, the WG had become an Inter-Division WG among the divisions: E, F and G.

5. Highlights from the Commissions and Working Groups, and future plans

Commission F1 Meteors, Meteorites and Interplanetary Dust

Held every three years, the "Meteoroids" conference is the main conference representing the Commission F1. The Meteoroids 2019 conference took place in Bratislava, Slovakia, from June 17-21, 2019. The next conference in the series, Meteoroids 2022, will be held at Huntsville, Alabama, USA.

Under the supervision of Commission F1, there exists the oficial IAU Meteor Data Center (MDC). The MDC maintains the Working List of Meteor Showers, which now contains 836 showers, 112 of which are considered as established ones. In the last years, over 50 more entries were added from ongoing video orbit surveys.

A long-term project was completed in this triennium: a book focusing on the Commission's scientific interests. In 2019, "Meteoroids: Sources of Meteors on Earth and Beyond" was published by Cambridge University Press (Editors by G. Ryabova, D. Asher and M. Campbell-Brown).

Commission F2 Exoplanets and the Solar System

Exoplanets have attracted considerable attention, and the public has wanted popular names for some of their favored planets. The IAU has responded with two public naming campaigns, with the participation of the former WG "Exoplanets for the Public". Both campaigns were well-received by the public, but the exoplanet scientists in general have not adopted public names in the research literature. In 2020, leaders of Commission F2 and Division F proposed to dissolve the WG "Exoplanets for the Public" and replace it with a more broadly chartered Functional WG Exoplanetary System Nomenclature. That proposal is under consideration, and the new WG would be under Division F (see below).

The Organizing Committee of Comm. F2 decided to hold a plebiscite asking all commission members issue to vote on four issues related to the nomenclature, the definition of an exoplanet, and the credits of discoveries. The consultation questionnaire was sent to all members of the commission in 2018. All four questions received support from a large majority of the participants, and the proposals were adopted (see details of the questions in the Comm. F2 triennial report).

Commission F3 Astrobiology

After the very successful "Astrobiology" conference held in Coyhaique, Chile in 2017, Comm. F3 planned to hold a new conference in 2020. The plans were to held it in Vredefort Dome (South Africa), in November, 2020. However, because of COVID-19, the organizing committee decided to postpone the conference to late 2021 or early 2022.

Several topics related to astrobiology made to the media headlines in the last triennium. In some cases, there was a strong debate about the announced results, and their implications for the astrobiology research. The IAU realizes the value of open discussion of all aspects of the scientific process including the importance of our relationship with the media.

Commission F4 Asteroids, Comets and Transneptunian Objects

The former Commission 15 "Physical Study of Comets & Minor Planets" was among the most numerous commission in the former IAU Div. III. But, in the structure adopted in 2016, no commission dealing with these topics was created. Nevertheless, the small bodies community is still one of the largest groups among the members of Div. F. A clear example of that is the number of over 500 attendees at the conference "Asteroids, Comets, Meteors" held every 3 years. Therefore, the Div. F SC presented a proposal for a new Commission "Asteroids, Comets and Transneptunian Objects". The IAU EC approved the new Commission F4 in January 2021. 221 IAU members have initially signed to become members of the new Commission. The tasks of Commission F4 will be:

- promote progress in the determination of physical and chemical properties of small solar system bodies, their interrelations and evolutionary paths,
- support the merging of observational, experimental, and theoretical approaches, to provide a better understanding of the formation and evolution of our solar system,
- organize meetings and forums, and support IAU Symposia, encouraging suitable data standards for small bodies,
- provide various services to the community, including scientific reports,
- highlight scientific progress to the larger public audience concerning the spectacular results of space missions to small bodies,
- encourage and promote the IAU public outreach activities related to small bodies.

WG Planetary System Nomenclature (WGPSN)

The WG Planetary System Nomenclature deals with the designation of planetary surface features, satellites and rings. From 24 January 2018 to 09 April 2020, 273 new names have been assigned for planetary surface features: Mercury: 49, Venus: 2, the Moon: 15, Mars: 68, Ceres: 11, Bennu: 36, Ryugu: 13, Callisto: 1, Europa: 10, Ganymede: 1, Titan: 17, Pluto: 36, Charon: 14 .

WG Small Bodies Nomenclature (WGSBN)

The WGSBN's main task is to judge and approve (or reject) newly proposed minor planet names. At present, there are now 22178 named minor planets, an increase of 957 since the last General Assembly in August 2018. The WGSBN also deals with comet naming. The majority of newly-discovered comets are named according to the established naming guidelines. There have been 176 new names of comets assigned during the triennium.

A special case was the designation of the second interstellar object 2I/Borisov, mentioned above.

Some interesting new minor-planet names approved during the triennium are:

- the potential hazardous asteroid (66391) Moshup = 1999 KW4 and its satellite Squannit.
- the extremely-eccentric TNO (541132) Leleakuhonua.
- the TNO and New Horizons target (486958) = 2014 MU69 Arrokoth.
- the Chinese mythological name Gonggong for the possible dwarf planet and scattered disc object (225088) = 2007 OR10; and its satellite Xiangliu.
- Queta, the newly-discovered satellite of Trojan (3548) Eurybates, a target of the NASA Lucy space mission.
- Dimorphos, the satellite of (65803) Didymos and target of the NASA DART mission.
- Naming of a small group of main-belters for COSPAR 2020 Awards recipients.
- (75190) Segreliliana honoring an Auschwitz survivor and Holocaust educator.

A new publishing procedure for the approved names is under revision. In the past, the approved names appear in the Minor Planet Circulars. In order to speed-up the process to approve and publish the adopted names, especially in some circumstances, the WGSBN

is proposing to have a dedicated Bulletin. The Bulletin will contain all the approved names and the respective citations. The information will be published at a dedicated IAU webpage. The list of names will then be provided by the WGSBN to the relevant organizations like: MPC, JPL, NEODyS.

WG Near Earth Objects NEO

In recent years, activities related to NEOs and planetary defense have benefited from dedicated international organizations and committees (e.g., the Un-endorsed International Asteroid Warning Network - IAWN, Space Mission Program Advisory Group - SMPAG, the IAF NEO Committee, etc), as well as from new results from sample return missions to NEOs and planned planetary defense space missions. Many members of the IAU NEO Working Group (WGNEO) are involved in these organizations, committees and space missions. NEO activities are regularly discussed and presented at the IAA Planetary Defense Conference, which takes place every two years. Therefore, it was imperative to redefine the role of the IAU WG NEO.

WGNEO should become a functional one, since its task exceeds the triennium, i.e.:

- Inform the IAU of the NEO risk.
- Be a contact to the media about NEO-related matters.
- Represent the IAU at committees related to the NEO matter, like IAWN, SMPAG, PDC-SOC, and establish relations with other organizations related to the subject.

The WGNEO should be an Inter-Division WG, with the coordination of Div. F and the participation of Div. A.

The proposal is under revision for the next triennium.

WG Exoplanetary System Nomenclature - Proposed

The IAU decided in the past decade to begin to formally adopt proper names for celestial bodies in at least some exoplanetary systems. The IAU's mechanism for naming exoplanets thus far has been public naming campaigns with great access. These campaigns have demonstrated that they can yield high quality and diverse names with sufficiently strong guidelines.

Recognizing that the IAU requires a long-term solution to the process for adopting proper names for celestial bodies in exoplanetary systems, the Div. F has proposed to create the WG Exoplanets Nomenclature, under Div. F, in coordination with Div. C and G. This WG should be considered as a functional one.

The initial tasks of this WG are:

- Propose the future process for naming exoplanets and their host stars.
- Set up the rules for selecting the planetary systems that are in a situation to be named.
- Produce guidelines for who can make a proposal of names and the general criteria for the names.
- Analyze the reasons for the low adoption of the IAU approved names among the exoplanets research community.
- Set up the specific campaign rules, create the committees, and supervise the operation of the campaign.

Aknowledgments

The President of the Division F would like to acknowledge the support and fruitful discussions with the rest of members of the Steering Committee, as well as the Officers of the Working Groups, during the triennium 2018-2021.

Gonzalo Tancredi

President of the Division F