# IAU Division C Working Group on Star Names 2019 Annual Report

## Eric Mamajek (chair, USA)

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The Working Group on Star Names (WGSN) consists of an international group of astronomers with expertise in stellar astronomy, astronomical history, and cultural astronomy who research and catalog proper names for stars for use by the international astronomical community, and also to aid the recognition and preservation of intangible astronomical heritage.

The Terms of Reference and membership for WG Star Names (WGSN) are provided at the IAU website: <u>https://www.iau.org/science/scientific\_bodies/working\_groups/280/</u>. WGSN was re-proposed to Division C and was approved in April 2019 as a functional WG whose scope extends beyond the normal 3-year cycle of IAU working groups. The WGSN was specifically called out on p. 22 of IAU Strategic Plan 2020-2030: "*The IAU serves as the internationally recognised authority for assigning designations to celestial bodies and their surface features. To do so, the IAU has a number of Working Groups on various topics, most notably on the nomenclature of small bodies in the Solar System and planetary systems under Division F and on Star Names under Division C."* 

WGSN continues its long term activity of researching cultural astronomy literature for star names, and researching etymologies with the goal of adding this information to the WGSN's online materials. New members and affiliates were added in late 2019, bringing welcome expertise on the history of cultural names of stars and asterisms: Danielle Adams (Lowell Observatory), Susanne Hoffmann (Friedrich-Schiller-Universität), and Doris Vickers (Ancient Skies).

Here is a brief summary of some ongoing WG activities:

- WGSN continued to answer inquiries from the public, astronomical community, and IAU leadership on celestial nomenclature and IAU history and policy on the topic.
- WGSN maintains the content of the IAU website <u>https://www.iau.org/public/themes/naming\_stars/</u> and the table of IAU star names.
- Steve Gullberg & Susanne Hoffmann are working on a comprehensive compilation of Babylonian star and asterism names.

- Duanne Hamacher is working on a comprehensive of Australian Aboriginal star and asterism names.
- WGSN is in ongoing dialogue with the Wergaia peoples through the Barengi Gadjin Land Council (in Victoria, Australia) regarding usage and spelling of the star name Unurgunite (σ CMa) and other stars. The name was originally adopted by the WGSN in 2017 based on recorded historical usage in the 19th century by the Boorong clan (which no longer exists), but free, prior and informed consent is being requested from their descendants.

## **Indian Star Names**

B.S. Shylaja is working on a comprehensive compilation of historical star and asterism names from India. Almost all texts of Indian astronomy have entries of the 27 stars corresponding to the zodiac. A compilation from different texts extending up to the medieval period for the coordinates of about 106 stars has revealed several interesting facts. The ambiguity with respect to the identifications of a few stars in crowded star fields has been resolved by using the magnitude estimates specified (though they are not very accurate). The compilation includes the other stars which are not part of the zodiac. The study also reveals that many original Indian names are names borrowed from the Arabs. It was possible to pick unidentified stars, which includes the marking for the 1604 supernova on a rete of an astrolabe. The supernovae records were found on stone inscriptions. Her 2019 publications on Indian star names are listed here:

"Records of supernovae from India"
B. S. Shylaja (2019, Current Science, 116, 8)
https://www.currentscience.ac.in/Volumes/116/08/1430.pdf)
"Observational records of stars in Indian texts – III (Gemini)"
R. Venketeswara Pai and B. S. Shylaja (2019, Current Science, 117, 8)
https://www.currentscience.ac.in/Volumes/117/08/1383.pdf
"Observational records of stars in Indian astronomical texts – IV (Cancer and Leo)"
B. S. Shylaja and R. Venketeswara Pai (2019, Current Science, 117, 10)
https://www.currentscience.ac.in/Volumes/117/10/1744.pdf
"Apa and Apamvatsa - Enigmatic stars catalogued in Suryasiddhanta"
B. S. Shylaja and R. Venketeswara Pai (2019, J. Astrophys. Astr. 40, 48)
https://www.ias.ac.in/article/fulltext/joaa/040/06/0048
"Identification of the Stars of the Saptarsi Mandala and its Vicinity"
B. S. Shylaja and R. Venketeswara Pai (2019, JAHH, 22, 294)
https://ui.adsabs.harvard.edu/#abs/2019JAHH...22..294S/abstract

## WGSN Contribution to IAU100 NameExoWorlds

A major activity that WGSN helped support in 2019 was the IAU100 NameExoWorlds public naming campaign<sup>1</sup>. WGSN members Eric Mamajek, Sze-leung Cheung and Hitoshi Yamaoka all served on the IAU100 NameExoWorlds Steering Committee<sup>2</sup>, with Mamajek co-chairing the campaign (with Alain Lecavalier des Etangs) and Yamaoka also chairing the NameExoWorlds National Committee for Japan.

WGSN was consulted by the IAU100 NameExoWorlds Steering Committee on the issue of whether names protected by intellectual property rights should be eligible for naming of exoplanets and host stars - if permission was explicitly given by the holder of the intellectual property rights. The naming campaign guidelines<sup>3</sup> agreed to by the Steering Committee already prohibited "names of a purely or principally commercial nature" and "names that are principally known as trademarks or protected by intellectual property claims". The issue surfaced among multiple national naming campaigns. Two examples included 1) names of characters from recently written fictional works that now appear in television shows and video games, and 2) cartoon characters from a famous long-running comic. In both cases, the intellectual property claims were clearly being exercised for profit through ongoing sales of media. It was commented that 1) use of such names by the IAU could constitute advertising, 2) the longstanding cultural value of such names are unclear in the present, and 3) ongoing use of the names in fictional works could be associated with actions that could reflect poorly on the IAU. Opinions by the WGSN were unanimous that the use of such commercial names - even with permission by the intellectual property owners - should be avoided by the IAU. The IAU100 NameExoWorlds Steering Committee concurred, and multiple name proposals were disgualified from further consideration.

A list of the IAU100 NameExoWorlds (2019) names for exoplanets and their host stars are listed at the end of this annual report, and more details on these names can be found at: <u>http://www.nameexoworlds.iau.org/final-results</u>.

The final business of the IAU100 NameExoWorlds Steering Committee was handled in the weeks after the conclusion of the campaign (December 2019), and the committee approved a few decisions relevant to WGSN before the ad hoc committee disbanded. First, the future responsibility for the nomenclature of the exoplanetary systems named during the IAU100 NameExoWorlds and the 2015 NameExoWorlds campaign was transferred to WGSN (i.e. cataloguing of the names, any future revisions to names, citations, system themes, and naming for additional bodies in the systems). Second, naming themes for the systems approved by the 2015 NameExoWorlds campaign were drafted and approved. The names and approved naming themes from the 2015 campaign are presented below.

<sup>&</sup>lt;sup>1</sup> <u>http://www.nameexoworlds.iau.org/</u>

<sup>&</sup>lt;sup>2</sup> <u>http://www.nameexoworlds.iau.org/steering-committee</u>

<sup>&</sup>lt;sup>3</sup> <u>http://www.nameexoworlds.iau.org/naming-rules</u>

It should be reiterated that the IAU names do not 'replace' designations (a common misunderstanding among the public and press), but may be preferred where a proper name seems more suitable (just as the proper name "Vega" does not invalidate the use of the designations "α Lyrae" or "HR 7001"). Second, it is recognized that the new names are unfamiliar, and while the names may come into more common use further in the future, their level of adoption and use in the near future remains unclear. For solar system bodies, once proper names are assigned, adoption by the community seems to be extremely rapid (e.g. witness the recent rapid adoption of "Arrokoth" for 2014 MU69). For use of the new IAU exoplanet proper names in publications, it is recommended to also mention their designations, if only after some initial mention (e.g. "*55 Cnc e/Janssen*"), i.e. following a *designation/proper name* format similar to what is done for some classes of solar system bodies, e.g. *(1) Ceres*, *67P/Churyumov–Gerasimenko*).

## 2015 NameExoWorlds Names and Themes

Format: Star designation/name Star etymology Planet designation/name Planet etymology Proposers of names from NameExoWorlds System theme

## 14 Andromedae / Veritate system:

- Star: 14 Andromedae/**Veritate:** From the latin "Veritas", truth. The ablative form means "where there is truth".
- Planet: 14 Andromedae b/**Spe:** From the latin "Spes", hope. The ablative form means "where there is hope".

Originally proposed by: Royal Astronomical Society of Canada Thunder Bay Centre, Canada. System theme: Terms associated with states of mind or knowledge in Latin language (ablative forms).

## 18 Delphini / Musica system:

Star: 18 Delphini/Musica: Musica is Latin for "music".

Planet: 18 Delphini/**Arion:** Arion was a genius of poetry and music in ancient Greece. According to legend, his life was saved at sea by dolphins after attracting their attention by the playing of his kithara.

Originally proposed by: Tokushima Prefectural Jonan High School Science Club, Japan. System theme: Ancient Latin or Greek terms or mythological characters associated with music.

## 42 Draconis / Fafnir system:

Star: 42 Draconis/**Fafnir**: Fafnir was a Norse mythological dwarf who turned into a dragon. Planet: 42 Draconis b/**Orbitar**: Orbitar is a contrived word paying homage to the space launch and orbital operations of NASA. Originally proposed by: Brevard Astronomical Society, USA.

System theme: Norse mythological dragons or beasts. "Orbitar" does not follow the proposed naming theme, but the name is retained for continuity.

## 47 Ursa Majoris / Chalawan system:

- Star: 47 Ursae Majoris/**Chalawan:** Chalawan is a mythological crocodile king from a Thai folktale.
- Planet: 47 Ursae Majoris b/**Taphao Thong**: Taphao Thong is one of two sisters associated with the Thai folk tale of Chalawan.
- Planet: 47 Ursae Majoris c/**Taphao Kaew:** Taphao Kae is one of two sisters associated with the Thai folk tale of Chalawan.

Originally proposed by: The Thai Astronomical Society, Thailand.

System theme: Names of characters and places associated with Kraithong, the Thai folk tale of the Crocodile lord Chalawan.

## 51 Pegasi / Helvetios system:

- Star: 51 Pegasi/**Helvetios:** Helvetios is the Latin for "the Helvetian" and refers to the Celtic tribe that lived in Switzerland during the Middle Ages.
- Planet: 51 Pegasi b/**Dimidium**: Dimidium is Latin for "half", referring to the planet's mass of at least half the mass of Jupiter.
- Originally proposed by: Astronomische Gesellschaft Luzern, Switzerland.
- System theme: Names of notable places and people associated with the ancient Helvetians. "Dimidium" does not follow the proposed naming theme, but the name is retained for continuity.

## 55 Cancri / Copernicus System:

- Star: 55 Cancri/**Copernicus**: Nicolaus Copernicus or Mikolaj Kopernik (1473-1543) was a Polish astronomer who proposed the heliocentric model of the solar system in his book "De revolutionibus orbium coelestium".
- Planet: 55 Cancri b/Galileo: Galileo Galilei (1564-1642) was an Italian astronomer and physicist often called the "father of observational astronomy" and the "father of modern physics".
   Using a telescope, he discovered the four largest satellites of Jupiter, and reported the first telescopic observations of the phases of Venus, among other discoveries.
- Planet: 55 Cancri c/**Brahe:** Tycho Brahe (1546-1601) was a Danish astronomer and nobleman who recorded accurate astronomical observations of the stars and planets. These observations were critical to Kepler's formulation of his three laws of planetary motion.
- Planet: 55 Cancri d/**Lipperhey:** Hans Lipperhey (1570-1619) was a German-Dutch lens grinder and spectacle maker who is often attributed with the invention of the refracting telescope in 1608.
- Planet: 55 Cancri e/**Janssen**: Jacharias Janssen (1580s-1630s) was a Dutch spectacle maker who is often attributed with invention of the microscope, and more controversially with the invention of the telescope.
- Planet: 55 Cancri f/**Harriot:** Thomas Harriot (ca. 1560-1621) was an English astronomer, mathematician, ethnographer, and translator, who is attributed with the first drawing of

the Moon through telescopic observations.

Proposed originally by: Royal Netherlands Association for Meteorology and Astronomy, Netherlands.

System theme: Notable astronomers and telescope-makers of Renaissance Europe.

## ε Tauri / Ain system:

Star: ε Tauri/Ain: Classic name meaning "eye" in Arabic adopted by WGSN in 2016.

Planet: Ain b (ε Tauri b)/**Amateru:** "Amateru" is a common Japanese appellation for shrines when they enshrine Amaterasu, the Shinto goddess of the Sun, born from the left eye of the god Izanagi.

Originally proposed by: Kamagari Astronomical Observatory, Japan. *System theme: Mythological characters and terms associated with eyes.* 

## *i* Draconis / Edasich system:

- Star: *i* Draconis/**Edasich:** Classic name of Arabic etymology (originally from *adh-dhikh*, Arabic for "the hyena") adopted by WGSN in 2016.
- Planet: Edasich b (*i* Draconis b)/**Hypatia:** Hypatia was a famous Greek astronomer, mathematician, and philosopher. She was head of the Neo-Platonic school at Alexandria in the early 5th century, until murdered by a Christian mob in 415.
- Originally proposed by: Hypatia (Student society, Physics Faculty of the Universidad Complutense de Madrid), Spain.
- System theme: Names associated with the life and scholarship of Hypatia, famous astronomer, mathematician, and philosopher of Alexandria. Edasich is a classic star name which does not follow the theme.

## ε Eridani / Ran system:

- Star: ε Eridani/**Ran:** Ran is the Norse goddess of the sea, who stirs up the waves and captures sailors with her net.
- Planet: ε Eridani b/**AEgir**: AEgir is Ran's husband, the personified god of the ocean. "AEgir" and "Ran" both represent the "Jotuns" who reign in the outer Universe; together they had nine daughters.

Originally proposed by: Mountainside Middle School 8th graders, USA.

System theme: Mythological daughters of the goddess Ran and jotunn AEgir in Old Norse poetry.

## γ Cephei / Errai system:

- Star: γ Cephei A/**Errai:** Classic name from Arabic etymology (ar-rāʿī, "the shepard") adopted by IAU WGSN in 2016.
- Planet: Errai b (γ Cephei b)/**Tadmor:** Ancient Semitic name and modern Arabic name for the city of Palmyra, a UNESCO World Heritage Site.

Originally proposed by: Syrian Astronomical Association, Syrian Arab Republic.

System theme: Names of sites and people associated with the ancient city of Palmyra, a UNESCO World Heritage Site.

## α Piscis Austrini / Fomalhaut system:

- Star: α Piscis Austrini/**Fomalhaut:** Classic name from *Fom al-Haut,* Arabic for mouth of the fish, adopted by IAU WGSN 2016.
- Planet: Fomalhaut b (α Piscis Austrini b)/**Dagon**<sup>4</sup>: Dagon was a Semitic deity, often represented as half-man, half-fish.

Original name proposed by: St. Cloud State University Planetarium.

System theme: Ancient names for the bright star Fomalhaut and mythological fish deities.

## HD 104985 / Tonatiuh system:

Star: HD 104985/**Tonatiuh**: Tonatiuh was the Aztec god of the Sun. Planet: HD 104985 b/**Meztli**: Meztli was the Aztec goddess of the Moon. Originally proposed by: Sociedad Astronomica Urania, Mexico. *System theme: Creation deities of Aztec mythology*.

## HD 149026 / Ogma system:

Star: HD 149026/**Ogma:** Ogma was a deity of eloquence, writing, and great physical strength in the Celtic mythologies of Ireland and Scotland, and may be related to the Gallo-Roman deity "Ogmios".

Planet: HD 149026 b/**Smertrios:** Smertrios was a Gallic deity of war.

Originally proposed by: Club d'Astronomie de Toussaint, France.

System theme: Deities from Gallic or Gallo-Roman mythology.

## HD 81688 / Intercrus system:

Star: HD 81688/Intercrus: Intercrus means "between the legs" in Latin style, referring to the star's position in the constellation Ursa Major.

Planet: HD 81688 b/**Arkas**: Arkas was the son of Callisto (Ursa Major) in Greek mythology. Originally proposed by: Okayama Astro Club, Japan.

System theme: Mythological figures associated with the Greek legend of Arkas, son of Callisto and Zeus. Intercrus does not follow the naming theme but is retained for continuity.

## μ Arae / Cervantes system:

- Star: µ Arae/**Cervantes:** Miguel de Cervantes Saavedra (1547-1616) was a famous Spanish writer and author of "El Ingenioso Hidalgo Don Quixote de la Mancha".
- Planet: µ Arae b/**Quijote**: Lead fictional character from Cervantes's "El Ingenioso Hidalgo Don Quixote de la Mancha".
- Planet: µ Arae c/**Dulcinea:** Fictional character and love interest of Don Quijote (or Quixote) in Cervantes's "El Ingenioso Hidalgo Don Quixote de la Mancha".
- Planet: µ Arae d/**Rocinante**: Fictional horse of Don Quijote in Cervantes's "El Ingenioso Hidalgo Don Quixote de la Mancha".
- Planet: µ Arae e/**Sancho:** Fictional squire of Don Quijote in Cervantes's "El Ingenioso Hidalgo Don Quixote de la Mancha".

<sup>&</sup>lt;sup>4</sup> Subsequent observations and analysis has shown that this object is likely to be a dust cloud rather than an exoplanet (e.g. Gaspar & Rieke 2020 <u>https://arxiv.org/abs/2004.08736</u>, Lawler et al. 2015 <u>https://arxiv.org/abs/1412.1129</u>).

Originally proposed by: Planetario de Pamplona, Spain.

System theme: Names of characters and places associated with Don Quijote ("El Ingenioso Hidalgo Don Quixote de la Mancha") by famous Spanish author Miguel de Cervantes Saavedra (1547-1616).

## β Geminorum / Pollux system:

- Star: β Geminorum/**Pollux:** Classic star name from the mythological twins Pollux and Castor from Greek and Roman mythology.
- Planet: Pollux b (β Geminorum b)/**Thestias:** Thestias is the patronym of Leda and her sister Althaea, the daughters of Thestius. Leda was a Greek goddess, mother of Pollux and of his twin Castor, and of Helen and Clytemnestra.

Originally proposed by: TheSkyNet, Australia.

System theme: Ancient names for the bright star Pollux or Greek mythological figures and places associated with the legend of Pollux.

## PSR B1257+12 / Lich system:

- Star: PSR B1257+12/Lich: Lich refers to a fictional undead creature known for controlling other undead creatures with magic.
- Planet: PSR B1257+12 b/Draugr: Draugr refers to undead creatures in Norse mythology.
- Planet: PSR B1257+12 c/**Poltergeist:** Poltergeist is a name for supernatural beings that create physical disturbances, from German for "noisy ghost".
- Planet: PSR B1257+12 d/**Phobetor**: Phobetor is a Greek mythological deity of nightmares, the son of Nyx, the primordial deity of night.
- Originally proposed by: Planetarium Südtirol Alto Adige, Italy
- System theme: Names for undead creatures and supernatural beings of the night.

## v Andromedae / Titawin system:

- Star: *v* Andromedae/**Titawin**: Titawin (also known as Medina of Tetouan) is a settlement in northern Morocco and UNESCO World Heritage Site. Historically it was an important point of contact between two civilizations (Spanish and Arab) and two continents (Europe and Africa) after the 8th century.
- Planet: *v* Andromedae b/**Saffar**: Saffar is named for Abu al-Qasim Ahmed Ibn-Abd Allah Ibn-Omar al Ghafiqi Ibn-al-Saffar, who taught arithmetic, geometry, and astronomy in 11th century Cordova in Andalusia (modern Spain), and wrote an influential treatise on the uses of the astrolabe.
- Planet: *v* Andromedae c/**Samh:** Samh is named for Abu al-Qasim 'Asbagh ibn Muhammad ibn al-Samh al-Mahri (or "Ibn al-Samh"), a noted 11th century astronomer and mathematician in the school of al Majriti in Cordova (Andalusia, now modern Spain).
- Planet: *v* Andromedae d/**Majriti:** Majriti is named for Abu al-Qasim al-Qurtubi al-Majriti, a notable mathematician, astronomer, scholar, and teacher in 10th century and early 11th century Andalusia (modern Spain).

Originally proposed by: Vega Astronomy Club, Morocco

System theme: Names of prominent medieval Andalusian astronomers and mathematicians, and their works. Titawin does not strictly follow this theme, but is retained for continuity.

#### ξ Aquilae / Libertas system:

- Star: ξ Aquilae/**Libertas:** Libertas is Latin for "liberty". Liberty refers to social and political freedoms, and a reminder that there are people deprived of liberty in the world even today. The constellation Aquila represents an eagle a popular symbol of liberty.
- Planet: ξ Aquilae b/**Fortitudo**: Fortitudo is Latin for "fortitude". Fortitude means emotional and mental strength in the face of adversity, as embodied by the eagle (represented by the constellation Aquila).

Originally proposed by: Libertyer (Student club at Hosei University), Japan (Asia-Pacific) *System theme: Latin terms associated with social and political freedoms.* 

#### IAU100 NameExoWorlds (2019) names for exoplanets and their stars

The following names for exoplanets and their stars are from the 2019 IAU100 NameExoWorlds campaign. The star names have been incorporated into the WGSN's "IAU Catalog of Star Names (IAU-CSN)" at <a href="https://www.pas.rochester.edu/~emamajek/WGSN/IAU-CSN.txt">https://www.pas.rochester.edu/~emamajek/WGSN/IAU-CSN.txt</a> and are in the process of being added to the master table on the IAU website at <a href="https://www.iau.org/public/themes/naming\_stars/">https://www.iau.org/public/themes/naming\_stars/</a>. The ASCII versions of the names are listed here, along with SIMBAD links to bibliographic information for the stars and exoplanets. The versions of the names with diacritics (where appropriate), etymologies, proposer names, and adopted system themes are compiled at <a href="http://www.nameexoworlds.iau.org/final-results">http://www.nameexoworlds.iau.org/final-results</a>.

BD+14 4559 / Solaris BD+14 4559 b / Pirx BD-17 63 / Felixvarela BD-17 63 b / Finlay HAT-P-14 / Franz HAT-P-14 b / Sissi HAT-P-15 / Berehynia HAT-P-15 b / Tryzub HAT-P-2 / Hunor HAT-P-2 b / Magor HAT-P-21 / Mazaalai HAT-P-21 b / Bambaruush HAT-P-23 / Moriah HAT-P-23 b / Jebus HAT-P-29 / Muspelheim HAT-P-29 b / Surt HAT-P-3 / Dombay HAT-P-3 b / Teberda HAT-P-34 / Sansuna HAT-P-34 b / Ggantija HAT-P-36 / Tuiren

http://simbad.u-strasbg.fr/simbad/sim-basic?Ident=BD+14+4559 http://simbad.u-strasbg.fr/simbad/sim-basic?Ident=BD+14+4559+b http://simbad.u-strasbg.fr/simbad/sim-basic?Ident=BD-17+63 http://simbad.u-strasbg.fr/simbad/sim-basic?Ident=BD-17+63+b http://simbad.u-strasbg.fr/simbad/sim-basic?Ident=HAT-P-14 http://simbad.u-strasbg.fr/simbad/sim-basic?Ident=HAT-P-14+b http://simbad.u-strasbg.fr/simbad/sim-basic?Ident=HAT-P-15 http://simbad.u-strasbg.fr/simbad/sim-basic?Ident=HAT-P-15+b http://simbad.u-strasbg.fr/simbad/sim-basic?Ident=HAT-P-2 http://simbad.u-strasbg.fr/simbad/sim-basic?Ident=HAT-P-2+b http://simbad.u-strasbg.fr/simbad/sim-basic?Ident=HAT-P-21 http://simbad.u-strasbg.fr/simbad/sim-basic?Ident=HAT-P-21+b http://simbad.u-strasbg.fr/simbad/sim-basic?Ident=HAT-P-23 http://simbad.u-strasbg.fr/simbad/sim-basic?Ident=HAT-P-23+b http://simbad.u-strasbg.fr/simbad/sim-basic?Ident=HAT-P-29 http://simbad.u-strasbg.fr/simbad/sim-basic?Ident=HAT-P-29+b http://simbad.u-strasbg.fr/simbad/sim-basic?Ident=HAT-P-3 http://simbad.u-strasbg.fr/simbad/sim-basic?Ident=HAT-P-3+b http://simbad.u-strasbg.fr/simbad/sim-basic?Ident=HAT-P-34 http://simbad.u-strasbg.fr/simbad/sim-basic?Ident=HAT-P-34+b http://simbad.u-strasbg.fr/simbad/sim-basic?Ident=HAT-P-36

HAT-P-36 b / Bran HAT-P-38 / Horna HAT-P-38 b / Hiisi HAT-P-40 / Taika HAT-P-40 b / Vytis HAT-P-42 / Lerna HAT-P-42 b / Iolaus HAT-P-5 / Chason HAT-P-5 b / Kralomoc HAT-P-6 / Sterrennacht HAT-P-6 b / Nachtwacht HAT-P-9 / Tevel HAT-P-9 b / Alef HD 100655 / Formosa HD 100655 b / Sazum HD 100777 / Sagarmatha HD 100777 b / Laligurans HD 102117 / Uklun HD 102117 b / Leklsullun HD 102195 / Flegetonte HD 102195 b / Lete HD 102956 / Aniara HD 102956 b / Isagel HD 108147 / Tupa HD 108147 b / Tumearandu HD 109246 / Funi HD 109246 b / Fold HD 117618 / Dofida HD 117618 b / Noifasui HD 118203 / Liesma HD 118203 b / Staburags HD 130322 / Monch HD 130322 b / Eiger HD 131496 / Arcalis HD 131496 b / Madriu HD 136418 / Nikawiy HD 136418 b / Awasis HD 137388 / Karaka HD 137388 b / Kereru HD 145457 / Kamuy HD 145457 b / Chura HD 148427 / Timir HD 148427 b / Tondra

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Eric Mamajek, Chair on behalf of the WG Star Names Pasadena, CA, USA 15 March 2020

## Erratum

December 27, 2020: The spelling for the name for HAT-P-21 has been corrected to "Mazaalai" ("Mazalaai" was a typo).

<sup>[1] &</sup>lt;u>http://www.nameexoworlds.iau.org/</u>

<sup>[2]</sup> http://www.nameexoworlds.iau.org/steering-committee