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We studied an Korean astrolabe made by Ryu Geum (1741~1788), the late Joseon Confucian scholar. It has a diameter of 17 cm and a thickness of 6 mm and is now owned by Museum of Silhak. In the 1267 of the reign of Kublai Khan of Mogol Empire, Jamal al Din, an Ilkhanate astronomer, present an astrolabe to his emperor together with 6 astronomical instruments. In 1525, an astrolabe was first made in Korea by Lee, Sun (李純, ?~?), a Korean astronomer and royal official of Joseon Dynasty. He was referred to Gexiang xinshu, a Mongolian-Chinese book by Zhao, Youqin (1280-1345), an astronomer of Mongolian Empire. This astrolabe has not been left. In the mid-17th century, an astrolabe was introduced to Joseon again through Hungai tongxian tushuo (渾蓋通憲圖說) edited by Chinese Mathematician Li Zhi-zao (李之藻, 1565~1630), that originated from Astrolabium (1593) of Christoph Clavius (1538-1612). It seems that Ryu referred to Hungai tongxian tushuo which affect to Hongae-tongheon-ui (渾蓋通憲儀) edited by Nam, Byeong-Cheol (南秉哲, 1817~1863). We analysis lots of circles on the mother and a set of index from the rete of of Ryu's astrolabe. We find that the accuracy of circles has about 0.2~0.4 mm in average if the latitude of this astrolabe is 38 degrees. 11 indices of the rete point bright stars of the northern and southern celestial hemisphere. Their tip's accuracies are about $2^{\circ}.9 \pm 3^{\circ}.2$ and $2^{\circ}.3 \pm 2^{\circ}.8$ on right ascension and declination of stars respectively.

[구 HA-02] A study of the *Xinfa Suanshu's* catalogue (1628.0): Comparison with the star catalogue of the *Tablae Rudolphinae*

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The *Xinfa Suanshu*, which was an important astronomical book in East-Asia, was published in 1644. This book was including the star catalogue. We researched the data of 1365 stars recorded in this star catalogue (the equinox of the catalogue is identified to be 1628 year). According to our analysis, it can be presumed that the star catalogue's data were observed from at least two

places or more. Based on historical background, we assumed that the *Xinfa Sunashu's* catalogue likely referenced knowledge from the Europe or Arab/Islamic culture. The researchers who have studied the *Xinfa Sunashu's* star catalogue have all focused on Brahe's star catalogue. But they did not provide clear evidence. Therefore, we are compared with the star data recorded in *Tablae Rudolphinae*. In conclusion, we confirmed that 881 stars among the 1365 stars were perfectly edited from position data of stars recorded in Brahe's star catalogue (1602).

[구 HA-03] Research on the Construction of the Archive for Korean Astronomical Records

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한국천문연구원에서 “동아시아 천문아카이브 구축을 위한 기획연구”의 일환으로 2018년 4월부터 6월까지 수행한 천문사료 연구 계획을 소개하고자 한다. 이 연구의 목적은 정사 및 개인문집에 수록된 방대한 한국의 천문기록 자료를 집대성하는 것이다. 우선적으로 고려사, 조선왕조실록, 승정원일기 등의 정사에 수록된 천문 기록들을 일정한 형식으로 수집하려고 한다. 이들을 다른 관찬 문헌 및 사찬 문집 등과 비교 연구를 통해 e-science 기반 자료로 활용하고자 한다. 1 단계 총 5년간의 연구기간을 통해서 순차적으로 open science platform 형식의 천문 아카이브 제공할 계획이다.

[구 HA-04] Study on a Web-based Testbed for Historical Astronomy Records and Accounts Services

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Korea has kept its records of astronomical phenomena since around 2,000 years ago. However, the contents and scope of relevant service have been limited for researchers who need those records due to lack of complete data collection. In this regard, it is necessary to establish efficient collection and management systems of Korean astronomical records by utilizing an environment that is easily accessible. This study is intended to complete the development of a testbed system that allows researchers to systematically input and validate, in a Web environment, multiple astronomical records among the historical documents until Modern Joseon after the Three Kingdoms Period. Recognition of the pre-translated data and tables in advance is followed by its storage in the database built on the Web. Then, data validation is implemented by providing a retrieval service according to a specific form to only a finite number of researchers who have access authority. This study is targeted at a testbed system that takes around three months to be completely developed. The completed testbed system is expected to allow internal and external researchers of an organization to easily access the service on the Web. This will ensure that the accuracy of the data can be verified mutually and help identify areas of service improvement. The opinions collected regarding service improvement will be reflected in the future system. Eventually, domestic astronomical records will subsequently be able to be utilized internationally through the multilingual service.

[구 HA-05] Planning of the Historical Contents for Astronomy Archives based on the Archival Methodology
(기록학 방법론을 토대로 한 천문아카이브 사료 콘텐츠 기획 연구)

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한국의 근현대 천문학은 조선시대 관상감의 명맥을 잇고 천문학의 현대화를 이루는 과정에서 역사적이고 문화적인 자료를 남겼다. 그 중 국립천문대를 거쳐 한국천문연구원에 이르기까지 주요 연구 결과물은 국가적 차원에서 보존해야 할 가치 있는 기록물들이다. 이들은 연구 환경 변화의 주요 인물과 스토리까지 포괄하고 있으므로 그 과정에서 파생된 소산물도 체계적으로 조직화하여 대중에게 서비스할 필요가 있다. 이 기획 연구는 도큐멘테이션 전략

과 사료 콘텐츠 세트 개발 방법론을 활용하여 한국 근현대 천문학 기록물을 수집하고 주제별로 재가공하는 절차를 제시한다. 도큐멘테이션 전략은 국내외에 산발적으로 분산된 한국 근현대 천문 사료의 유형과 지역 등 편중성을 가려내어 중복된 기록물은 걸러내고 희소성 높은 기록물을 선별하여 수집하는 방법론이다. 천문 사료 콘텐츠 세트는 한국천문학사의 주요 인물과 천문대 등 학술적, 문화적으로 가치 있는 주제를 중심으로 본(本) 기록물과 연관 기록물을 맥락적으로 관리 서비스할 수 있는 방법론이다. 이 연구를 통하여 초중등 교과 과정이나 유관 기관과 서비스를 연동하여 한국천문지식정보의 범용화와 천문 아카이브에 대한 대중의 접근 편의를 도모할 수 있을 것으로 기대된다.