

15:20 [I-1-3]

Calculation of Solar Eclipse Times Using the Zhongxiu-Daming Calendar

Go Eun Choi^{1,2}, Ki-Won Lee³, Byeong-Hee Mihn^{1,2}, Young Sook Ahn¹

¹Korea Astronomy and Space Science Institute

²Korea University of Science and Technology

³Catholic University of Daegu

We study a method for the calculation of solar eclipse times using the Zhongxiu-Daming (重修大明) calendar developed by Zhao Zhi-Wei (趙知微, 1156-1189), a Chinese astronomer from the Jin dynasty (A.D. 1115 - 1234) in 1171. This calendar was developed to improve the Daming (大明) calendar developed by Yang Ji (楊級, A.D. ? - ?), an astronomer from the same dynasty, in 1127, and was used in China before the introduction of the Shoushi (授時) calendar of the Yuan dynasty (A.D. 1279 - 1368) in 1281. In Korea, however, the Zhongxiu-Daming calendar was used as a supplementary calendar with the Chiljeongsan-Oepyeonwas for determining astronomical events, particularly solar and lunar eclipses, since the reign of King Sejong (A.D. 1418 - 1450) of the Joseon dynasty (A.D. 1392 - 1910). In this study, we analyze the method of calculation of the solar eclipse times using the Jeongmyoyeon-Gyeosik-Garyeong (Example Supplement for the Calculations of Solar and Lunar Eclipses Occurred in 1447) of the Zhongxiu-Daming calendar and compare them with the results of modern calculation. In addition, we estimate the observer's location of the sunrise and sunset times utilized in the calculations of the eclipse times.

15:35 [I-1-4]

A Study on the Calendrical Calculation System and the Calendrical Exegesis of Joseon Dynasty, through Jakryeoksiks.

Ki-Chul Shin

Chungbuk National University

Jakryeoksiks were published to make the calendar during the late Joseon Dynasty. These books were used to make the annual astronomical almanac of Siheonryeok system. Currently, Jakryeoksiks that are well known for is five. Some of Jakryeoksik are an name of independent one book and the others are an name of certain chapter on relative books. Because of unique similarities and differences, These are very interesting. Jakryeoksik is an basic reference data. These books are used in various ways for the annual astronomical almanac research. the differences of Jakryeoksiks are utilized in the study of the sambok and other calendrical exegesis. Despite this variety of research, We just don't understand what are the exact contents of Jakryeoksiks and the specific goals for publication. In addition, We don't know how to apply Jakryeoksiks to the annual astronomical almanac. A comprehensive study about the Jakryeoksiks is still not made. So this study includes the entire contents of the five Jakryeoksiks and a comparative analysis of one another. Furthermore I will find out not only the relevance of Jakryeoksiks and the annual astronomical almanac, but also the relevance of the calendrical calculation system and exegesis.

15:50 [I-1-5]

Study on the Application of the CBD Methodology for the Operational Type Software in Real Time Observation System

Yoon Kyung Seo, Byeong-Hee, Mihn^{1,2}, Soo-Yeon Kang

¹Korea Astronomy and Space Science Institute

²Korea University of Science and Technology

³Korea Aerospace Research Institute

Component Based Development is one of the commonly used methodologies in software engineering fields. Operational type software development for astronomical observation systems features various communication interfaces and arithmetic algorithms. Their development has greater impact on systems, that is they determine overall performances of entire systems. Therefore, the CBD methodology has been selected in previous studies and applied for more stable and effective software development. In this presentation, we will explain the background and aims of the current research, as well as what has been found by previous studies. Moreover, the procedure, method and results of the research focused on the differentiation will be presented in terms of software engineering. The process and results of this study is expected to contribute to the investigation for a more appropriate methodology in the area of similar system development.

제2발표장 (크리스탈홀2)

■ I-2 Solar System Exploration I

좌장: 김주현 (항우연)

14:50 [I-2-1]

Wide-Angle Polarimetric Camera for the Lunar Surface

Young-Jun Choi, Sungsoo S. Kim, Kyung-In Kang, Minsup Jeong^{1,2}, Chae Kyung Sim, Il-Hoon Kim², Haingja Seo¹, Ik-Seon Hong^{1,4}, Eunjin^{1,4}, Kilho Baek², Jingyu Kim³, Bonjoo Koo, Chulwoo Lim³, Seyeon Kim³,

¹Korea Astronomy and Space Science Institute

²Kyung Hee University

³Korea Advanced Institute of Science and Technology

⁴Chungnam National University

Polarimetry of lunar surface gives us a useful information about regolith such as a grain size and porosity, but unfortunately it was never performed from the lunar orbit. Recently, we started to develop Wide-Angle Polarimetric Camera (PolCam) for Korea Pathfinder Lunar Orbiter (KPLRO), to construct a map of polarization for the lunar surface. The purpose of the PolCam are; 1) obtaining the polarization data of the whole lunar surface at wavelengths of 430 nm and 750 nm for a phase angle range from 0° to 120° with a spatial resolution of ~ 80 m. 2) obtaining the albedo ratios at 320 nm and 430 nm for the whole lunar surface with a spatial resolution of ~ 80 m. In order to design PolCam, we calculated the surface brightness and thermal condition using the data