



## **A normalization model of Lunar surface brightness temperature:based on data obtained by CE-1 MRM and CE-2 MRM**

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The Chang' E-1 Microwave Radiometer (CE-1 MRM) is a four-channel radiometer onboard the China's first lunar orbiter, Chang' E-1. It operates at 3.0, 7.8, 19.35 and 37GHz in a nadir-only viewing direction, and it is mainly used to obtain the brightness temperature distribution of the lunar surface. The Chang' E-2 Microwave Radiometer (CE-2 MRM) onboard Chang' E-2 has the same structure, working mode and scientific objective with CE-1 MRM, the only difference is that CE-2 MRM works in a lower orbital altitude. Both of CE-1 MRM and CE-2 MRM obtain a lot of observation data in different time, respectively, but since the brightness temperature they observed is significantly affected by the solar illumination which varying with , so it is difficult to make a directly comparsion between their observation results. In order to analyse the regularity of the brightness temperature on lunar surface and compare the results, we propose a normalization model and calculate the numerical difference between CE-1 MRM and CE-2 MRM. The result shows that: The brightness temperature is a function of period time of the moon, brightness temperature at lunar night (no solar illumination) has a linear dependence with period time, but a nolinear dependence in lunar day, and this regularity in 37GHz channel is the most obvious; Difference of brightness temperature between CE-1 and CE-2 in 3 channels is about 5~10K, this may due to the different data processing algorithm, and the biggest discrepence which could reach to 25K in 7.8GHz channel indicates that there would be a System deviation.