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AFRICA2MOON: A LOW COST, LOW FREQUENCY RADIO ASTRONOMY ARRAY ON THE MOON

Abstract

Inspired by South Africa's contribution to the Square Kilometre Array (SKA) Radio Telescope, Africa2Moon aims to be the first radio astronomy array on the Moon, putting Africa in a first mover position in space exploration, for the first time. With the recent rapid increase in successful national and private lunar missions, the non-profit Foundation for Space Development Africa aims through collaboration and partnership to get to the lunar surface to perform first time science in radio astronomy in the sub-10MHz frequency range; inspire future African generations to push the boundaries of space and science; and demonstrate that multinational and multidisciplinary collaboration can overcome any challenge. Here we discuss the Africa2Moon mission design, including tackling the challenges of the antenna and receiver design for low frequency observation, time and frequency reference engineering for array coherence, and in particular the thermal and power supply engineering towards surviving the lunar night.