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STARRY NIGHT, STARRY BRIGHT: THE VALUE OF DARK AND QUIET SKIES IN AN AGE OF
MEGA-CONSTELLATIONS**Abstract**

In an age of proliferating satellite constellations and congested Earth orbits, what is the value of dark and quiet skies? Mega-constellations such as Starlink are illuminating the night sky with unnatural light and make astronomical observations — both professional and recreational — increasingly difficult. Radio frequency interference (RFI) from these constellations also adds obtrusive “noise” to sensitive astronomical observations in the radio portion of the electromagnetic spectrum. Space archaeologists estimate that the emergent commercial space market will add more than 100,000 satellites to Earth’s orbit by the end of the decade, and this humbling estimation is generating concerns from numerous scientists, particularly astronomers, regarding the future of dark and quiet skies that are optimal for many aspects of scientific research. This topic has gained substantial international attention, as evident by the creation of the joint UNOOSA/IAU Dark and Quiet Skies for Science and Society conference, but contributions to the conversation of mitigating light pollution predominantly focus on the potential adverse effects of artificial sky brightening from satellites.

This paper will analyze the positive value of dark skies and the significance of protecting astronomy in current policy frameworks — or how these values are absent — through the lens of philosophy and applied ethics. These values are then synthesized to define moral obligations that can guide policymaking, soft law, and practical measures and approaches that can be implemented in satellite manufacturing to balance the conflicting interests of astronomers and satellite operators. The author will identify how the conflicts formed, investigate how values are implemented into current international and soft law, explore how the influence of values in policy framework can be extended to the dark and quiet skies issue, and assess what are appropriate mechanisms or measures for resolving these conflicts.