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Smartphone Astronomy: Observing the International Space Station

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This paper presents a hands-on educational activity that explores practical astronomy and physics through the observation and analysis of the International Space Station (ISS) using smartphone photography. By taking advantage of modern smartphone cameras' ability to capture bright objects in the night sky, the activity connects direct observations of the ISS to key physics concepts, including celestial coordinate systems, apparent magnitude, circular motion, and gravitational acceleration. The procedure involves predicting ISS flyovers, recording video, analyzing frames to measure angular velocity, and calculating the ISS's orbital speed and the gravitational acceleration at its altitude. The results show reasonable accuracy, and the discussion highlights factors affecting precision, such as the observer's position relative to the ISS orbital plane. This activity demonstrates how everyday technology can support meaningful and engaging STEM exploration.

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