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Recent achievements in mono-static, high repetition rate ranging at the WLRS

The Wettzell Laser Ranging System is a mono-static third generation SLR-System, which was specifically built to allow Lunar Laser Ranging. Therefore, it was designed to provide the highest possible signal to noise ratio, a high pointing accuracy and a smooth tracking precision. As a result, a mono-static setup, with a mechanical transmit-receive switch was chosen, which precludes higher laser repetition rates above 20 Hz. In order to reach sub millimeter normal point precision newer SLR-systems are ranging with significantly higher repetition rates in the regime of hundreds of Hz up to more than 2 kHz. In order to increase the repetition rate of the WLRS, while the HEO and lunar ranging capability is fully maintained, we can switch the optical configuration via a motor driven opto-mechanical assembly. The high- repetition rate configuration provides an additional advantage, because it is inherently eye-safe. The paper describes the concept and characterizes both modes of operation.