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Hot Plasma Emissions in the Ultra-compact Binary Pulsar 4U 1626-67

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4U 1626-67 is an ultra-compact binary pulsar with a pulse period of 7.7 sec and an orbital period of 40 min. Its X-ray spectrum varies distinctively before and after torque reversal episodes. 4U 1626-67 is a peculiar ultra-compact binary in that it not only truncates its accretion disk at the magnetospheric radius, but also emits Ne and O Doppler X-ray lines, The nature of these lines have remained quite mysterious but we can now show that these lines originate from a coronal type plasma with temperatures up to 10 Million degrees located at the magnetospheric radius. We also observe consistent variations in the disk lines before and after torque reversal. The observed disk lines constrain the angle of inclination to 38 degrees, which is is significally larger than previously assumed. We discuss these findings in the context of accreting X-ray binaries and binary pulsar properties.

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