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COMPARISON OF SDSS AND GAIA QSO DATA: SEARCHING FOR ANOMALIES IN QSO SPECTRA

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Quasars (QSOs) are one of the most luminous, powerful and energetic objects in the Universe. QSOs inhabit the centre of galaxies and are powered by supermassive black holes accreting material. With large scale surveys such as Gaia and the Sloan Digital Sky Survey (SDSS) we can search for photometric and spectral flux anomalies across time in a more meaningful way. The aim of this work is to evaluate flux agreements and flag potential gross errors between Gaia DR3 and SDSS DR18 photometric observations of QSOs within different redshift ranges, leveraging overlapping datasets. A cross-matched sample of over 500,000 QSOs was compiled by querying SDSS DR18 and Gaia DR3 archives. Fluxes in Gaia's BP and RP bands were directly compared to integrated SDSS spectra across corresponding wavelength intervals, with correlation coefficients and linear fits used to quantify agreement. Outliers were identified via flux ratio thresholds and further investigated individually. An analysis including all redshift ranges yields a stronger correlation of $\rho = 0.600$. Most outliers are linked to noisy or faint spectra in SDSS or large flux uncertainties in Gaia, rather than systematic redshift-dependent effects.