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MACHINE LEARNING TECHNIQUES AND THE STELLAR SPECTRAL FEATURES

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Spectral data obtained at the 6-m telescope of the Special Astrophysical Observatory of the Russian Academy of Sciences and at the MaNGA survey were analyzed for the peculiar galaxy UGC 4261 in detail. This object is merging with a companion galaxy. During the spectral study, in addition to the standard lines for HII regions, additional emission lines (the strongest, in the [OIII] λ 5007 Åregion) were detected. Using the NIST, Atom tracer, and AtomicLineList databases, the unknown lines were identified with permitted FeI lines. The presence of these lines helps us to study the interstellar/intergalactic medium. The emission line profiles revealed the presence of several components and were approximated by Gaussians. One of them was kinematically coincided with regions emitting in Fe I lines. Our estimate of the electron density and temperature based on the [SII], [OIII], [NII] and H_β, H_α lines showed that the iron lines are formed in the densest and coldest regions observed in this system. Lower estimates of the FeI flux were obtained. The question of using obtained values for direct estimation of the iron abundance is under consideration due to its low accuracy. Whether this iron was ejected by supernovae, which are actively being born in the galaxy's nuclear region as a result of gas infall, or whether it is located in tidal structures and illuminated by regions of active star formation remains to be seen.