gram of the *ISO*/LWS consortium attempts to probe the dust enshrouded regions of these objects with LWS grating spectra of a representative set of IR-bright galactic nuclei. Here we present *ISO* Long Wavelength Spectrometer and ground-based near IR Fabry-Perot imaging observations of the Antennae (NGC 4038/39), a pair of galaxies thought to be in the early stages of merging. We present observations of the [O III]52,88 μm, [N III]57 μm, [O I]63 μm, [C II]158 μm, Brγ, and H_2 1–0 S(1) lines. From these observations it appears that a starburst, characterized by a stellar temperature of 39–40 000 K, occurred in the extranuclear cloud located in the overlap region of the galactic disks. The ultraviolet light from these stars illuminates the complex with an ultraviolet field flux 200–2500 times the local interstellar radiation field and excites H_2 1–0 S(1) emission in their vicinity. The strong H_2 emission observed toward the galactic nuclei is probably shock excited, possibly tracing supernovae from an older starburst or infalling material.

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ON THE QUESTION OF THE INTERACTION OF HIGH AND LOW VELOCITY GAS SYSTEMS IN THE GALAXY NGC 1275

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The data on spectra and direct images in UV, optical, red, and IR for the two-velocity systems of NGC 1275 (the dominant galaxy in the Perseus Cluster), published in the literature, are considered. The gas of one of the systems belongs to NGC 1275, the other system is approaching the galaxy at about 3000 km s^{-1}. X-ray observations indicate that the low velocity system (LV) is made of cooling flow filaments from the intercluster gas. The nature of the high velocity system (HV) is unclear. Signs of the interactions of LV and HV systems could be useful in understanding the nature of the HV system. The HV-LV interaction exhibits the same shapes and spatial distributions of their gas structures, with elongated filaments in both systems pointing towards the nucleus of the galaxy. The HV gas is observed near the nucleus, at 0″.5 (170 pc). The clusters of young stars of LV system are found at the peaks of the HV emission and at intermediate velocity gas (IV). The optical and radio data indicates turbulence in the LV gas, which is usually explained in terms of cooling flows, but it could also be connected with a tidal interaction of the LV and HV systems. Among the arguments against the idea of interaction is that the intermediate velocity gas (IV), with velocity relative to NGC 1275 around 600–800 km s^{-1}, is not common. The wavelength of H_α line of IV gas equal to 6576–6581Å is near to the wavelength of emission line [N II] 6584Å of LV gas. The 6584/H_α ratios for LV and HV gas are 0.84 and 0.07, respectively, and this is ascribed to different physical conditions in the two systems. These ratios can also be explained as a result of the superposition of IV H_α emission and LV [N II] emission. The star-like object (SO) located at PA = 45° and 7″ from the nucleus has a direct relation with the interaction of the HV and LV systems. The blue spectrum exhibits the absorption lines H and K, Ca^+, at zero redshift. Most authors think that the SO is a galactic star, but it has a complex blue spectrum and different in blue and red. Optical images show that the SO coincide with the peak brightness of one of the HV clouds. There is also an IV cloud near this object. Observations in various wavelengths show that while the distance of SO from the nucleus at λ 2400Å is 8″.4, in the otical is −6″.8. We suggest the that nature of SO must be investigated using the multiwavelengths observations. To appear in Astrofizika, 1997.

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