Signposts of massive stellar evolution onto the ambient neutral gas. The case of NGC 2359

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NGC 2359 is an optical nebula excited by the powerful wind and the radiation of the Wolf-Rayet (WR) star HD 56925 (= WR7). Based on observations of the HI hyperfine transtion at 21 cm and mm observations of CO and 13CO, we have drawn the history of the interaction of HD 56925 with the surrounding neutral material. The main sequence phase of this star has carved a huge HI bubble of about 50 pc, which is expanding at 12 km/s. On the other hand, the molecular emission around the nebula shows signs of interaction with the radiation field and the stellar wind during a previous RSG/LBV phase and probably the WR phase. There is a region with rather hot (80 K) gas almost coincident with the optical nebula, surrounded by more opaque and dense molecular gas. We think that the gas is beeing excited by the radiation field of the star and by shocking produced during the expansion of the WR bubble. This region is a good candidate to make mm, sub-mm and infrared observations of spectroscopic lines to determine the physical and chemical effects of the evolution of massive stars onto the interstellar medium.

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