IS STELLAR WIND MASS LOSS DURING CORE HYDROGEN BURNING IMPORTANT FOR EVOLUTION.

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SUMMARY. The influence of wind mass loss during core hydrogen burning on the evolution of massive stars can be investigated using a relation between $\dot{M}$-L-M-T_{eff} based on

a. observed ($\dot{M}$, L, T_{eff}) values and masses which are determined from evolutionary computations (e.g. Nieuwenhuijzen and de Jager, 1990, *A.&A.* **231**, 134),

b. the theory of radiation driven stellar wind. With the cooking recipe of Kudritzki et al.(1989, *A.&A.* **219,** 205), we determined the predicted $\dot{M}$ of a star at the beginning, in the middle and at the end of core hydrogen burning using the 20 $M_\odot$, 40 $M_\odot$, 60 $M_\odot$ and 85 $M_\odot$ evolutionary computations of Maeder and Meynet (1987, *A.&A.* **182**, 243). The following two formulae then give $\dot{M}$ as a function of L-T_{eff} and M with a sigma value lower than 0.04, i.e.

$$\log(-\dot{M}) = -13.18 + 1.88 \log L - \log M - 0.4 \log T_{eff} \quad (1)$$

$$\log(-\dot{M}) = -10.31 + 1.51 \log L - 0.2 \log M - 0.88 \log T_{eff} \quad (2)$$

(M, L and M are in solar units)

Formula (1) is determined by assigning equal weights to all points. Formula (2) however gives the relation between $\dot{M}$ and the stellar parameters when the different points are weighted according to the function $M_i^{-3.5}$ (M_i stands for the ZAMS mass of the corresponding evolutionary track); the function describes the observed number density of massive stars corrected for observational selection (Humphreys and McElroy, 1984, *Ap. J.* **284,** 565). With these formulae, evolution with convective core overshooting according to the model of Maeder and Meynet (1987, *A.&A.* **182,** 243) predicts that a 40 $M_\odot$ (60 $M_\odot$, 85 $M_\odot$) star will loose less than 2.7 $M_\odot$ (5.2 $M_\odot$, 7.6 $M_\odot$ respectively) during core hydrogen burning, i.e.

> if the theory of radiation driven stellar wind in its present form accurately predicts the mass loss of a massive core hydrogen burning star, then one can conclude that it is a fairly unimportant process as far as evolution is concerned.

The results summarised here will be published in Astron. Astrophys.

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Wolf-Rayet Stars and Interrelations with Other Massive Stars in Galaxies, 547.