

## Colliding-wind simulations of the TeV gamma-ray binary B1259-63/SS 2883

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PSR B1259-63/SS 2883 is one of only three binaries, from which periodic TeV ( $= 10^{12}$  eV) emission has been detected. It is a massive binary system consisting of a Be star and a radio pulsar orbiting in a highly eccentric ( $e=0.87$ ), 3.4yr orbit. Many modeling works have been done on this system, based on the colliding wind scenario, where the pulsar wind collides with the Be wind (and disk). All previous models have assumed the spectral type of the Be star SS 2883 to be B2. However, recent high resolution spectroscopic observations with VLT has revealed that the spectral type of this Be star is significantly earlier than previously thought (Negueruela et al. 2010). Given that the wind mass loss rate is sensitive to the spectral type of the star, adopting an earlier spectral type can significantly change the structure of the wind-wind collision in this system.

In this talk, we report on the results from 3-D SPH simulations of the TeV binary B1259-63/SS 2883, where the wind mass loss rate is assumed to be  $10^{-8} M_{\odot} \text{yr}^{-1}$ , ten times as high as that for a B2 star. In contrast to our previous simulations reported at the last ASJ meeting, where the pulsar wind dominated the Be wind and disk, the new simulations show that the interaction surface is now wrapped around the pulsar, so that the strong interaction between the pulsar wind and the Be disk occurs only for a short period of time when the pulsar is aligned to the Be disk.