

# EFFICIENT STAR-FORMATION IN THE TIDAL ARMS OF THE STEPHAN'S QUINTET GROUP OF GALAXIES

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NGC 7318B in Stephan's Quintet has two optical arms (toward N and S) emanating from the eastern part of the main body. Since these arms are similar morphologically to the tidal tails of merging galaxies such as NGC 4038/9, it is considered that NGC 7318B itself is a major merger with a retrograde orbit. In order to study the emission-line activity in the tidal arms of NGC 7318B, we took CCD narrow-band ( $H\alpha$  ON and OFF) images and then found a large-scale arc in  $H\alpha$  emission which traces closely the arms. This  $H\alpha$  arc resembles both the radio and the soft X-ray arcs morphologically (van der Hulst & Rots 1981; Pietsch et al. 1997), suggesting that a single physical mechanism is responsible for all of these kinds of emission. Our optical spectroscopic observations of the shell-like feature at the southern tip of the arc reveal both broad  $H\alpha$  emission and stronger-than-normal [NII] and [SII] emission lines, which are typical of supernova remnants (SNRs). The required number of SNRs is estimated to be as much as  $\sim 10^6$ .

The proposed scenario for the arc formation is the following (Ohyama et al. 1997): The two tidal tails were formed during a past merging event between two gas-rich disk galaxies. Giant HII regions containing numerous massive stars ( $\sim 10^6$ ) were formed almost simultaneously along the tails (e.g., Barnes & Hernquist 1992). After  $\sim 10^{6-7}$  years, supernovae exploded almost simultaneously and formed the emission arc observed in  $H\alpha$ , radio, and soft X-ray.

## References

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