7. 3 ONE-ARMED OSCILLATION DISC MODEL IN BE DISC OF δ-SCO

From Figures 5.10, we can estimate approximately that the *V/R* variation of H_α from 2007 to 2010 takes about 1.7 years or probably more to complete the cycle and a supposedly shorter period for the inner disc regions. The long period therefore categorises the *V/R* variation of of H_α as a long-term *V/R* variation which consistent with the one-armed oscillation disc model proposed by Okazaki (1991). However, in 2011 specifically during or near the periastron, the *V/R* variation of H_α takes less than 50 days to complete the cycle which is considered a very short period and incompatible with the one-armed oscillation disc model. Thus, the perturbation of the V/R variation that occurs during the periastron supposed stem from the tidal effect of the companion. However, the degree of impact from the tidal effect is out of this work, though more close inspection is needed.

Figure 7.8a and 7.8b, respectively, show the tracing of the H_α line profile for 2010 and 2011 with respect to the one-armed oscillation disc model. Based on the illustration of the *V/R* evolution of the H_α line profile in this figure, we found that the Keplerian disc of δ-Sco is rotating in a prograde direction, which follows the one-armed oscillation disc model by Okazaki (1991). However, the *V/R* ratio alone is not sufficient to determine the direction of rotation without knowing its radial velocity. The measurements of radial velocity on the H_α, H_β and H_γ line profiles in Figure 5.13c shows that the lines shift to longer wavelengths when the *V/R* ratio increase and vice-versa. This indicates directly that the rotation of the Be disc of δ-Sco is in the prograde direction. The evolution of the *V/R* ratio in the time scale shown by the H_α line profile indicates strongly that the disc is in ellipsoidal form or is an elongated disc, in addition to the asymmetrical features shown in the profile.