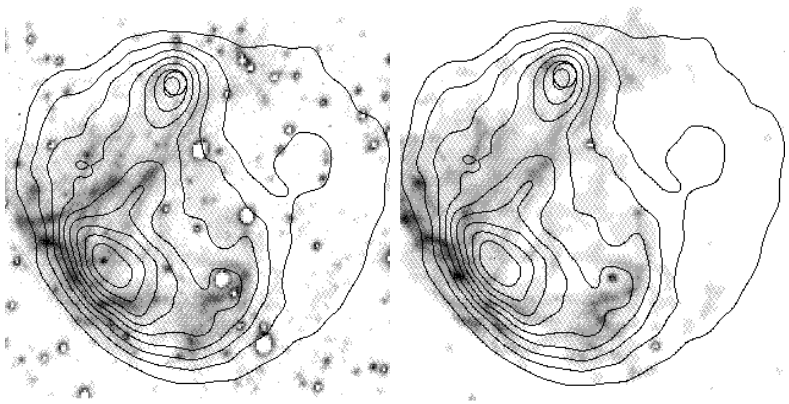

FIG. 2. 6100Å(left) and OIII (right) images of N49 with the smoothed X-ray contours and best-fit error circle of RX 0525-6604 overplotted.

radius lower limit of $\sim$ 11 km, consistent with typical neutron star radii.

Optical images of N49 were obtained in both OIII (5007Å) and a broadband continum filter centered at 6100Å(Olaf Vancura, private communication) and compared to the X-ray image. The optical images of N49 in OIII and 6100Åare shown in Figure 2, with the best fit error circle of RX 0525-6604 and the total X-ray image contours overplotted. In a supernova remnant, X-ray emission is expected from H and He ions collisionally ionized in the interstellar gas heated by the supernova shockwave (12). Heavier atoms are also ionized in the post-shock gas, and produce emission at optical wavelengths. Thus we expect a general correlation between the the X-ray emission and the optical emission line radiation from supernova remnants, if the X-ray flux is due to shock-heated gas. In the OIII image, little significant optical flux is evident in the RX 0525-6604 centroid error box, while the southeast emission region correlates well with the X-ray emission. Similarly, examination of the 6100Åimage shows no evidence for significant stellar emission within the error circle of RX 0525-6604. This agrees with the result of more sensitive optical counterpart searches of the SGR 0526-66 error box (13) and suggests that the X-ray emission from RX 0525-6604 is not due to either normal stellar processes or shock-heated gas.

TIMING ANALYSIS

The X-ray emission from both the entire N49 nebula and just RX 0525-6604 were searched for coherent pulsations in the period range from $7.5 - 8.5$ seconds, corresponding to the periodicity detected during the March 5, 1979 gamma-ray burst from SGR 0526-66. For each data set, the arrival times of photons were taken from a circular region of radius $6''$ centered on the best-