

Executive summary

We present an interpretation of the time variability of the X-ray flux reported from a 15 years multi-epoch observational campaign of the supernova remnant Cassiopeia A by Chandra. The increase of the [4.2-6] keV non-thermal flux up to 50 % was observed at a number of inward shocks within small regions close to center and in the west limb of the remnant. We show quantitatively that the flux increase traces the growth of the magnetic field due to vortical amplification mechanism at the inward shocks colliding with inner overdensities. The fast synchrotron cooling as compared with shock-acceleration time scale qualitatively explains the subsequent flux decrease.