

# FAST Proposal Coverpage

Last updated: 01/10/2019

## Project Name:

*(A 1-line title for your project)*

*Searching radio emission from thermonuclear supernova 2018evt with strong CSM-interaction*

## Project Summary:

*(A 1 paragraph summary of your project, including its scientific goals and how you will address them. This information will be potentially public.)*

It's universally recognized that a rare subclass of type Ia supernovae (SNe Ia) will exhibit a strong interaction with their surrounding circumstellar matter (CSM) since the discovery of SN 2002ic. These exotic thermonuclear supernovae are likely to explode inside a dense circumstellar envelope, as demonstrated by the presence of distinct H  $\alpha$  lines and unusual high luminosity at late phases. Although radio emission is one of the signposts of CSM-interaction in SNe, to the date, no positive detection has yet been obtained from any Ia supernova. One of the most nearby such events, SN 2018evt, was recently identified with extreme CSM-interaction suggested by optical photometry and spectral observations. The proposed observation for the supernova will give a powerful insight into its pre-explosion mass-loss history, by virtue of FAST unprecedentedly high sensitivity. Any direct evidence in radio wavelengths will expand our understanding of the nature of these thermonuclear explosions by deriving properties of their shock waves and local environment. It may penetrate the veil of the perplexing progenitor system and provide new evidence for the longstanding single- vs double-degenerate-explosion dispute.