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## Time domain imaging of transient and variable radio sources

Cendes, Y.N.

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**Author:** Cendes, Y.N.

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# Thesis Propositions

Yvette Cendes

1. The radio remnant for SN 1987A underwent a transition 9,300 days post-explosion when it finished passing through the inner equatorial ring of dust, which also corresponded with a re-acceleration of the original supernova shockwave. (Chapter 2)
2. SN 1987A will continue to be a fascinating object of study for decades to come, and will remain our best picture of the evolution of a supernova into a remnant until a galactic supernova is discovered. Further, this dissertation lies in a transitional period for SN 1987A studies whereby it's likely one of the few remaining where the author is older than the supernova.
3. Decades of archival radio observations of SN 1972E and SN 1895B indicate a clean circumstellar environment, and can rule out progenitor models such as a recurrent nova, core-degenerate objects, and ultra-prompt explosions and white dwarf (WD) mergers with delays of a few hundred years between the onset of merger and explosion. (Chapter 3)
4. Radio observations of nearby Type Ia supernovae may hold the key to uncovering their progenitors, as well as the discrepancy between measurements of  $H_0$  in the local environment compared to the Cosmic Microwave Background.
5. Particular care must be taken in the automatic flagging of Radio Frequency Interference (RFI) when searching for brief radio transients, as the genuine transient can be mistaken for interference. (Chapter 4)
6. The majority of slow transients in the local radio sky at GHz frequencies are AGN, with more exotic phenomena comprising only a small handful of the transients at this distance. (Chapter 5)
7. Despite initial optimism, the low-frequency radio sky in general and LOFAR in particular are not suited for radio transient searches.
8. Writing for the public should be encouraged more amongst scientists. If nothing else, you get the experience of working with an editor on writing, which would not be remiss for many scientists.
9. Look for the helpers. You will always find people who are helping.
10. Nolite te bastardes carborundorum.