




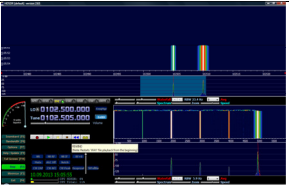
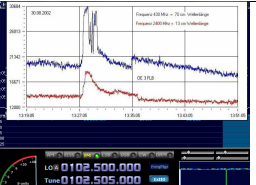









The SRWD project

The radio astronomical IAP project supernova radio wave detector and analyzer (SRWDA) aims to detect and analyze radio signals from supernovas. At the base station a set of antennas, which gives also direction information of the signals, is aimed to be connected to a computer which acts as Software Defined Radio (SDR). Afterwards an analyzing program is aimed to be installed.

Later the detectors are planned to be installed on satellites to improve the resolution and to suppress disturbing signals from earth stations.

Master Thesis

Initial Prototype for a base station for supernova radio wave detector and analyzer (SRWDA)

			External I/O DLL		I	
					Q	
						
						
System of 4 antennas to get directional information http://www.amazon.de/Antenne-DVB-T-Stick-mobile-Ger%C3%A4te/dp/B0049TM2E0/ref=ln_t_mi?ie=UTF8&psc=1&smid=A3CNOI05LJVNHG	Coaxial adapter for each antenna http://www.amazon.de/Wentronic-Koaxial-Adapter-0-1m/dp/B003VVPBBS/ref=ln_t_mi?ie=UTF8&psc=1&smid=A11HOTMS12DU4AQ	DAB+ USB Stick for each antenna http://www.amazon.de/Terratec-ran-T-Stick-DVB-T-schwarz/dp/B007EB995U/ref=ln_t_mi?ie=UTF8&psc=1&smid=A3QJEZPA3Z32RH	To connect the 4 antenna array correctly to the HSDR program	The free software defined radio HSDR	I/Q interface (normally to soundcard)	SRWDA Analyzer Analysis software package

Detailed description and working plan

2 weeks -> Chapter 1 of Master Thesis	Literature research (radio astronomy, SDR) and specification of master thesis
4 weeks -> Chapter 2 of Master Thesis	Installing the development environment: Visual C++ 2008 Express with qt 4.7 (1 week) Initial installation of HSDR with one antenna (ExtIO is the free program zadeg.exe) and introductory learning of HSDR program package (1 week) Short introduction to winrad open source program code to get an understanding of the more complex HSDR code (1 week) Introduction to communication technology (e.g. base band, mixing, I/Q signal) (1 week)
4 weeks -> Chapter 3 of Master Thesis	Migrating existing External I/O DLL ExtIO_Demo.dll from www.hdsdr.de , which is suitable for one antenna to a external IO DLL which is suitable for the antenna array Testing the ExtIO_Array.dll with the four antennas and HSDR
1 week -> Chapter 4 of Master Thesis	Determination of Requirements for SRWDA Analyzer (in cooperation with IAP supervisor)
9 weeks -> Chapter 5 of Master Thesis	Design and Implementation of SRWDA Analyzer
2 weeks -> Chapter 6 of Master Thesis	Test of the system with moving sending objects (a sender from a moving car)
4 weeks	Final writing and correction
Sum: 26 weeks (= 6 months)	

Keywords:

Radio Astronomy, Software Designed Radio, Communication Technology, Visual C++, qt

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