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3D visualization and analysis of HI in and around galaxies

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**rijksuniversiteit
 groningen**

3D Visualization and Analysis of HI in and around galaxies

PhD thesis

to obtain the degree of PhD at the
University of Groningen
on the authority of the
Rector Magnificus Prof. E. Sterken
and in accordance with
the decision by the College of Deans.

This thesis will be defended in public on
Friday 26 May 2017 at 16.15

by

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“Visual Analytics, the combination of automated data processing and human reasoning, creativity and intuition, supported by interactive visualization, enables flexible and fast interaction with the 3D data, helping the astronomer to deal with the analysis of complex galaxies.”

– Chapter 2

Cover:

The front page illustrates the HI component of WEIN069, one of the visualization Use Cases studied in this thesis. The three figures are different visual representations of the HI data (from left to right): position-velocity (P-V) diagram, velocity field and volume rendering. Data for this study were collected by Mpati Ramatsoku using the *Westerbork Synthesis Radio Telescope*.

The background image represents a dream-like abstraction image of a motherboard circuit. The image has been processed using the open-source DeepDream neural network code developed by Google Inc. (<https://deepdreamgenerator.com/>).

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Contents

1	Introduction	1
1.1	Hydrogen in galaxies	1
1.2	HI and kinematics of galaxies	4
1.3	HI content and star formation rate in galaxies	5
1.4	HI signatures of gas accretion and removal	9
1.5	HI surveys	11
1.6	The role of 3D visualization	12
1.7	This thesis	14
1.7.1	Thesis outline	16
2	The role of 3D interactive visualization in blind surveys of HI in galaxies	19
2.1	Introduction	21
2.1.1	WSRT and the Apertif data	22
2.1.2	Data visualization	22
2.2	Scientific visualization	23
2.2.1	Visualization in astronomy	23
2.2.2	3D visualization	25
2.2.3	Volume rendering	25
2.2.4	Out-of-core and in-core solutions	26
2.2.5	3D hardware	27
2.2.6	Visual Analytics	27
2.3	Visualization of HI datasets	28
2.3.1	Visualization and source finding	29

2.3.2	Automated pipelines and human intervention.	33
2.3.3	Visualization and source analysis	34
2.4	Prerequisites for visualization of HI	41
2.4.1	Qualitative visualization	41
2.4.2	Quantitative visualization	42
2.4.3	Comparative visualization	43
2.4.4	High-dimensional visualization techniques	44
2.4.5	Summary	45
2.5	Review of state-of-the-art 3D visualization packages	45
2.5.1	Review results	47
2.5.2	Visualization of HI and 3DSlicer	49
2.6	Concluding Remarks	54
2.7	Additional on-line material	58
2.8	Acknowledgments	58
3	Finding faint HI structure in and around galaxies: scraping the barrel	59
3.1	Introduction	61
3.2	Test Cases	62
3.2.1	Models	62
3.2.2	NGC4111	64
3.2.3	NGC3379	65
3.2.4	WEIN069	66
3.3	Filtering techniques	67
3.3.1	Box filter	68
3.3.2	Gaussian filter	69
3.3.3	Intensity-Driven Gradient filter	70
3.3.4	Wavelet filter	72
3.4	Optimal filtering parameters	75
3.5	Noise consideration	81
3.6	Performance	84
3.7	Discussion and conclusions	89
3.8	Acknowledgments	94
4	SlicerAstro: a 3D interactive visual analytics tool for HI data	95
4.1	Introduction	97
4.2	The SlicerAstro environment	98

4.2.1	Design	99
4.2.2	Implementation	101
4.2.3	Interface framework	103
4.2.4	Rendering and user interactions	105
4.3	Interactive filtering	108
4.4	Interactive 3D masking	111
4.5	Interactive modeling	115
4.5.1	Requirements	116
4.5.2	Use Case A: analysis of sources with tidal tails . . .	118
4.5.3	Use Case B: finding anomalous velocity gas	123
4.6	Summary	125
4.7	Appendix A	129
4.8	Appendix B	130
4.9	Acknowledgments	136
5	Conclusion	137
5.1	Synopsis of this work	137
5.2	Final remarks and prospects for future research	142
	Bibliography	162
	Summary	172
	Samenvatting	182
	Acknowledgment	185

