Acknowledgements

This thesis concludes three years of work. During this period, I had the daily possibility to grow both scientifically and personally together with a great group of researchers and friends.

First of all I would like to thank my supervisor Prof. Bruno Andò and Prof. Salvatore Baglio for being a source of inspiration, creativity and enthusiasm.

I would like to thank Prof. Luigi Fortuna, coordinator of this PhD course, for the constant support.

I want to say thanks to all the guys at the "Measurement Group" for their friendship which has made the work of these years more enjoyable and fun.

This thesis is also the result of collaborations and synergies with other national and international research groups. In particular I want to express my gratitude to Adi Bulsara, SPAWAR Systems Command, San Diego (USA), it was a pleasure to collaborate with him;

I want to particularly thank my family, and Rosanna...this thesis is dedicated to her.