# Curriculum Vitae,

# Cabrera Morrone Octavio Miguel

**CURRENT ACTIVITIES AND MAIN TASKS**

My name is Octavio Cabrera, I am a PhD Student at Instituto Balseiro. Currently, I have finished my work and I am writing the PhD thesis. Ever since obtaining my Ms. Degree in physics I have been working on applied mathematics mainly related to engineering topics such as dynamical systems, deterministic and stochastics models, graph theory, control design and analysis, signal and data processing theory, among others. My PhD is focused on principles and application of passive radar systems, with a strong emphasis on detection and estimation algorithms, processing techniques and hardware architectures. Over the last two years I have been working on the development of a Passive Radar Demonstrator. Particularly, I have coordinated a collaboration between CONICET (Argentina) and INVAP (Argentina) mainly during 2018 in order to develop this prototype that is nowadays in operation.

POSITION : 2014-to date

PhD Student at Instituto Balseiro (San Carlos de Bariloche, Argentina) under the direction of Damián H. Zanette (CONICET) - PhD fellowship given by CONICET.

Description thesis: Passive radar systems, principles and applications.

Optative Curses:

- Parallel programing in GPU
- Analog communications
- Digital communications
- Stochastic process and Statistical of non-equilibrium
- Graph theory
- Introduction to Topology (just listener)
- Stochastic Signal Processing
- Advanced Digital Systems (VHDL in FPGA)

**EDUCATION**

MASTER'S DEGREE

MSc in Physics – 2013 (Instituto Balseiro, San Carlos de Bariloche, Argentina).

Thesis: "Desarrollo de un sistema de aterrizaje autónomo para aviones no tripulados".

Thesis Description: Development of an autonomous landing control system for unmanned airplanes.

Optative Courses:

Introduction to Robotics
Dynamical Systems
Neural networks
Introduction to Information Theory
Applied Information Theory
Control Systems Theory

BACHELOR'S DEGREE

BSc in Physics – 2012 (Instituto Balseiro, San Carlos de Bariloche, Argentina)
Optative Courses: Group Theory
**Note:** The bachelor degree at Balseiro Institute is a 4.5 years bachelor. But the first 2 years it have to be done in another university.

MATERIALS ENGINEERING

From 2009 To 2010 (Instituto Sabato, Buenos Aires, Argentina)

ELECTRONIC ENGINEERING

From 2007 To 2009 (UTN, Córdoba, Argentina)

HIGH SCHOOL DEGREE

Electronic Technician. (Instituto Salesiano Villada, Córdoba Argentina)

LANGUAGES

Spanish: Native
English: Oral and Written skills
Italian: under-Intermediate, Oral and Written skills

SCHOOLS

2014: ¨Winter Telecommunication School¨ (San Carlos de Bariloche, http://lcr.uns.edu.ar/EsTelecBariloche/cur sos2.html)

2014: "GPU Parallel Programin¨ (San Carlos de Bariloche, www.fisica.cab.cnea.gov.ar/gpgpu/).

2015: ¨Mathematical models in biology¨ (ICTP, Sao Paulo, Brazil)

**INTERNSHIPS**

2010: INVAP, Study of Friction Welding Phenomena (materials department). (San Carlos de Bariloche, Argentina)

**COLABORATIONS**

INVAP, Development of a FM Passive Radar Demonstrator, (Work as System Engineer)

**PRESENTATIONS AND WORKSHOPS**

1. 2018 – INVAP, Oral Presentation “Signal Processing for Multi-Static Passive Radars”
2. 2017 - INVAP, Oral Presentation “Signal Processing for Passive Radar Systems”.
3. 2016 - INVAP, Oral Presentation “Passive Radar Systems and Deterministic Clutter Models Analysis”.
4. 2016 – Instituto Balseiro, Oral Presentation “Stochastics effects in Bistatic clutter, an approach using Feynman Integrals.”
5. 2015 - INVAP, Oral Presentation “Simulation System and a model of bistatic clutter for Passive Radar Systems”.
6. 2014 - AFA (Association of Argentine Physics). Poster Presentation “Passive radars, principles and applications” (Tandil, Buenos Aires, Argentina).
7. 2013 - LAWNP conference. Poster Presentation “ Epidemic dynamics of pediculosis in social groups ”. (Córdoba Argentina).
8. 2012 - AFA (Association of Argentine Physics) conference. Poster Presentation “ Dynamic model of pediculosis ”. (Córdoba Argentina).
9. 2012 - AFA (Association of Argentine Physics) conference. Poster Presentation “ Statistical characterization of photometer for Arsat Satellite project ”. (Córdoba Argentina).
10. 2006 - FREESCALEELECTROCOMPONENTES S.A . Application note for domotic system using the microcontrollers device of Motorola. (Buenos Aires, Argentina).
11. 2005 - EXPOTRONIC: Presentations of PID control system application for domotic. (Córdoba Argentina).

**TEACHING EXPERIENCE**

2017-to date:

Teaching Assistant and study program designer of the course. Chair of Applied Mathematical Elements for technological topics. (Instituto Balseiro, San Carlos de Bariloche, Argentina).

2015-to date:

Teaching Assistant. Chair of Information Theory (Instituto Balseiro, San Carlos de Bariloche, Argentina).

Teaching Assistant. Chair of Probability Theory (Instituto Balseiro, San Carlos de Bariloche, Argentina).

2012 - 2014:

Teaching Assistant. Chair of Mathematics (Instituto Balseiro, San Carlos de Bariloche, Argentina).

2008:

Student Teacher. Chair of Physics (UTN Facultad Regional Córdoba, Argentina)

**FELLOWSHIPS**

2009 : YPF, to study Materials Engineer

2010-2012: CNEA, to finish the Bachelor in Physics at Balseiro Institute

2012-2013: CNEA, to do the Master in Physics at Balseiro Institute

2014-to date: CONICET, to do PhD in Engineer at Balseiro Institute

**PROGRAMING SKILLS**

MATLAB (advanced user)

MATHEMATICA (normal user)

CUDA (normal user)

C (normal user)

VHDL (basic user)

**PUBLISHED PAPERS**

O.Cabrera and D.H Zanette, Avoiding extinction by migration: The case of the head louse, Pediculus humanus capitis, published in Advances in Complex Systems.

DOI: 10.1142/S0219525915500101

O.Cabrera and D.H Zanette, Bistatic Transfer Function for a Planar Distribution of Stationary Scatterers: Analytical Results, published in Geoscience and Remote Sensing Letters, IEEE.

DOI: 10.1109/LGRS.2015.2475635

Ignacio Gavier, D.H Zanette and O.Cabrera, Stochastic effects on the bistatic transfer function of a planar scatterer distribution, published in Waves in Random and Complex Media.

DOI: 10.1080/17455030.2018.1551643

O.Cabrera and D.H Zanette, Functional integral approach to the transfer function of a stochastic scattering channel, published in Waves in Random and Complex Media.

DOI: 10.1080/17455030.2018.1557353

**OTHERS SKILLS AND ABILITIES**

Navigation license with sailing boats and yacht motor (Prefectura, San Carlos deBariloche, Argentina).

Lifeguard License (Prefectura Villa Carlos Paz, Córdoba, Argentina).

First Aid (Red Cross, Córdoba, Argentina, and others).

WSA (Red Cross, Córdoba, Argentina).

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**Octavio Cabrera Morrone**