

# APPLICANT DORA-COMPLIANT CV

## SECTION 1 – Applicant Details (max. 3 pages)

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## CAREER PROFILE (Education and employment)

He is an assistant professor/Lecturer at School of Electrical & Electronic Engineering, UCD, Ireland. He was a Research Fellow and a SFI Starting Investigator with the School of Electrical and Electronic Engineering at the Dublin Institute of Technology. He received PhD in Electromagnetic Field and Microwave Technology from Southeast University, China, in January 2003.

From 1996 to 1998, he was a lecturer with the Nanjing Forestry University's School of Information and Science Technology, where he taught general physics and microwave engineering.

From 1998 to 2003, as a researcher undertaking his PhD at the Key State Laboratory of Millimeter Waves, Southeast University, China

In 2003, he joined the Shanghai Jiaotong University, China, as a Post-Doctoral Research Associate to work on a Chinese 863 National Plan project on "*Design of 35GHz Radar System Based on Monolithic Microwave Integrated Circuit Technology.*"

The project was in collaboration with the Shanghai Institute of Microsystem and Information Technology within the Chinese Academy of Sciences. He led to the initial system design and was responsible for the design and delivery of a compact 2x2 and 4x4 element 35 GHz antenna array.

From 2005 to 2019, he had been working at the Antenna and High Frequency Research Centre in the Dublin Institute of Technology as a Senior Researcher. Since then, he had led the work on the circularly polarized antenna research in the Centre.

During Oct 2016 and Sept. 2017, He joined Taoglas Ltd as a full-time staff and antenna expert funded by the SFI Industrial Fellowship Grant. He engaged in antenna engineering design and integrated system application, especially, for GPS and GNSS applications.

## A. KEY ACHIEVEMENTS IN RESEARCH EXCELLENCE & IMPACT

### 1. Omni-directional CP Antenna Investigation

The low profile omni-directional patch antenna is presented using the top and bottom patches with a middle feed point. The new investigation achievements have been carried out, such as "Best paper award at the 2013 Loughborough Antennas & Propagation Conference for the paper titled Differentially-Fed Microstrip Patch Antenna for Omnidirectional GPS applications." And "DIT Inventor Competition Award 2012 for the Omni-directional Circularly Polarized Antenna project."

### 2. Multiband Helical Antenna Investigation for GPS System

A low-profile printed helical antenna is introduced to achieve the multiband frequencies which cover the GPS, Galileo, and Beidou systems. The designed antenna consists of four ports with the four shaped strips which is printed on the flexible substrate ( $DK=2.33$ ,  $DF=0.0018$ ), and the thickness is 0.38mm). The antenna dimension is a diameter of 64 mm and height 25mm with low profile. The designed antenna is suitable to be applied on the GNSS systems with low profile printed configuration.

### **3. Triple GPS Antenna Design based on the plastic substrates**

The designed patch antenna carries out a triband frequencies circularly polarized performance. The antenna consists of the three-layer plastic substrates with the thickness of 3 mm and  $DK=9$ ,  $DF=0.0006$ , and the three patches in the bottom, the middle and top layers. The proposed antenna is fed by the SMA connector which relates to the top patch. The bottom patch and middle patch are coupled with SMA through Via. The ground plane size is 45 mm × 45 mm. The proposed antenna is very light and compact size.

## **B. Key achievements in the development of individuals and collaborations**

Under the support of the SFI SGR, the Research project “Compact and High-Performance Circularly Polarized Antennas for the Integration of Wireless Positioning, Communications and Asset Tracking Systems.” Has been completed in 2013. The research outcomes are to realize new ways of miniaturizing wideband and broad-beam CP antennas and omni-directional CP antennas designs for GNSS and GPS applications. Some research achievements such as miniaturized wideband and broad-beam CP antennas, omni-directional CP antennas designs have been published 7 papers in the top of Journals in the area of antenna and propagation including 4 papers of *IEEE Trans. on Antenna & Propagation*. The outcomes at the mid-term review were graded ‘Excellent’. Under the support of the research project, I supervised one PhD student who has graduated and got an ELEVATE International Career Development Fellowship co-funded by Marie Curie Actions.

## **C. Key achievements supporting broader society & the economy.**

### **Dual Frequency CP antennas for WiFi System**

A 5 dBi dual-band WiFi circular polarization patch antenna with a high efficiency dual-band 2.4GHz/5GHz right hand circular polarization is presented. The ratio between the two frequency bands can be adjusted by changing the middle patch and the V-shaped slot size of the top layer. The V-shaped slots improve the axial ratio bandwidth and assist with setting the frequency ration between the two bands.

The research outcomes have been applied for a patent which has been granted by the United States Patent and Trademark Office (Patent No.10069208). The new antenna has been produced by the Taoglas Ltd.

## **D. Key achievements supporting the research community.**

- Acting as an Academic Editor of International Journal of Antenna and Propagation (Since 2015-)
- Technical Program Committee member for the 65th IEEE Vehicular Technology Conference, Dublin

- Peer reviewer for the following journals
  - *IEEE Transactions on Antenna and Propagation*
  - *IEEE Antenna and Wireless Propagation Letters*
  - *IEEE Transactions on Biomedical Engineering*
  - *IEEE Transactions on Information Technology in Biomedicine*
  - *Journal of Electromagnetic Waves and Applications*
  - *IET Microwaves Antennas and Propagation*
  - *IEEE Access*
  - *IET Electronics Letters*

## SECTION 2 – Publication Details (max. 2 pages)

### A. SELECTED SENIOR-AUTHOR PUBLICATIONS

1. A. Narbudowicz, M. John, V. Sipal, **X.L.Bao**, M. J. Ammann, "Design Method for Wideband Circularly Polarized Slot Antennas," *IEEE Trans. on Antenna & Propag.*, Vol. 63, No.10, 2015, pp.4271-4279.
2. **X. L. Bao**, and M. J. Ammann, "Printed Triple-band Circularly Polarized Antenna for the Wireless Systems," *IET Electronics Letters*, Vol. 50, No.23, 2014, pp.1664-1665.
3. **X. L. Bao** and M. J. Ammann, "Monofilar Spiral Slot Antenna for Dual-Frequency Dual-Sense Circular Polarization", *IEEE Trans. on Antennas & Propag.*, Vol. 59, No. 8, pp. 3061-3065, 2011.

### B. OTHER PUBLICATIONS

1. K. Yang, M. H. Hoang, **X.L.Bao**, P. McEvoy, and M.J. Ammann, "A Dual-Stub Ka-Band Vivaldi Antenna with Integrated Bandpass Filter," *IET Microwaves, Antennas & Propag.*, Vol. 12, No.5, pp.668-671, 2018.
2. K. Yang, **X. L. Bao**, P. McEvoy and M.J.Ammann, "Pattern Reconfigurable Back-to-Back Microstrip Patch Antenna," *IET Microwaves, Antennas & Propag.*, Vol. 10, No. 13, pp. 1390 – 1394, 2016.
3. A. Pananhi, **X. L. Bao**, G. Ruvio, M. J. Ammann, "A Printed Triangular Monopole with Wideband Circular Polarization," *IEEE Trans. on Antenna & Propag.*, Vol. 63, No.1, 2015, pp.415-418.
4. A. Narbudowicz, **X.L.Bao**, M. J. Ammann, H. Shakhtour, and D. Heberling, "Circularly polarized antenna with steerable dipole-like radiation pattern," *IEEE Trans. on Antennas & Propag.*, Vol. 62, No.2, 2014, pp. 519-526.
5. A. Narbudowicz, **X. L. Bao** and M. J. Ammann, "Dual-band Omnidirectional Circularly Polarized Antenna", *IEEE Transactions on Antennas & Propagation*, Vol. 61, No. 1, pp. 77-83, 2013.
6. **X. L. Bao**, M. J. Ammann and P. McEvoy, "Microstrip-fed Wideband Circularly Polarized Printed Antenna", *IEEE Trans. on Antennas & Propag.*, Vol. 58, No. 10, pp. 3150-3156, 2010.
7. **X. L. Bao**, M. J. Ammann, "Dual-Frequency Dual-Sense Circularly-Polarized Slot Antenna Fed by Microstrip Line", *IEEE Trans. on Antennas & Propag.*, Vol. 56, No. 3, pp. 645-649, 2008.