

**Aquitaine –Karnataka collaboration  
Scientific Project for Pre-PhD student exchange  
Scientific Proposal**

Project Title	IQ Error Correction in Digital Radio Receivers	
Scientific domain	Digital Communication	
Summary (ca. 10 lines)	Modern communication receivers require 60 to 90 dB image rejection to maintain an acceptable receiver quality. Weaver architecture is the most widely used image rejection technique in the digital domain to suppress the image frequency. It is sensitive to gain and phase mismatches arising in the IQ channel resulting in poor image rejection. The IQ mismatches arise even after using perfectly matched local oscillator (LO) and/or base band Low Pass Filters (LPF) in the I and Q channels. The aim of this project is to perform IQ error correction in the digital domain to improve the image frequency rejection ratio.	
Student profile wished	Electronics/ Electrical/ Communication Engineering	
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Timing & duration for project (give approximate ranges)	4 to 6 Months	
Representative References	<ul style="list-style-type: none"> <li>• Advanced Methods for I/Q Imbalance Compensation in Communication Receivers, IEEE Trans. Signal Processing, Vol. 49, NO. 10, Oct, 2001.</li> <li>• Calibration of Phase and Gain Mismatches in Weaver Image-Reject Receiver, IEEE Journal Solid-State Circuits, Vol. 39, No. 2, Feb 2004.</li> </ul>	

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