

**Design and Calibration of IQ-Mixers, S. SABAH,**  
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mixers play an increasing role in processing high-frequency  
signals, especially as modulators and demodulators. In  
addition, they allow to measure amplitude and phase of a  
high-frequency signal with respect to a reference signal or  
to control the phase during an amplitude measurement. An  
IQ-mixer consists of two balanced mixers and two hybrids.  
It provides two IF signals of equal amplitude which are in  
phase quadrature. Two different mixers were developed for  
RF-processing electronics at the TESLA Test Facility Linac,  
one with a frequency of 1.5 GHz and the other with  
12 Ghz. The paper describes the basic concept of an IQ-  
mixer, the design and a calibration procedure. The errors  
introduced by the different RF components and methods to  
correct them are discussed in detail. In particular a software  
correction scheme is presented, by which the resulting  
distortion is minimized. Finally, lab tests and operational  
results are summarized.