## DESIGN EQUATIONS OF IMPEDANCE-TRANSFORMING DIRECTIONAL COUPLER

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**Abstract.** In this paper, a normalized scattering matrix is derived in a practical case of a two-port network terminated with arbitrary impedances. As one of its applications, design equations of impedance-transforming directional couplers are derived.

**Key words:** microwave maching, impedance-transforming, directional coupler.

## WAVELET-BASED ELECTROENCEPHALOGRAPHIC SUB-BANDS DECOMPOSITION TO ENHANCE P300 WAVE DETECTION

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**Abstract.** The multiresolution wavelet analysis, when the electroencephalo-graphic (EEG) signal is successively decomposed in sub-bands components, enhances the P300 potential (an event related potential in response to an odd-ball paradigm). Is shown to be a more appropriate method than the direct analysis of the signal. The similarities between the results obtained using the EEG recordings from three important electrodes (Pz, Fz and Cz), performing the sub-band decomposition, point out the possibility of using the P300 evoked potential for implementation of a brain computer interface or for persons' authentication.

Key words: EEG signals, event related potentials, wavelet, P300 wave.