

Combining EEG and fMRI in the Study of Epilepsy
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The EEG is the primary signal providing information on epileptic disorders because it shows many patterns that are specific to different types of epilepsy and because it is easily recorded over extended durations, thus allowing the recording of the mostly unpredictable epileptic events. The EEG suffers, however, from fundamental ambiguities when attempting to find the brain sources of the electrical potentials recorded on the scalp. It has recently become possible to record the EEG inside a MR scanner and perform functional MRI studies measuring changes in the BOLD signal in response to epileptic events in the EEG. Such changes indicate which brain region is active during an epileptic spike or spike and wave burst. We will discuss the techniques used for such studies and the difficulties encountered in their analysis, and present results obtained in patients with focal epilepsy and in patients with primary generalized epilepsy.