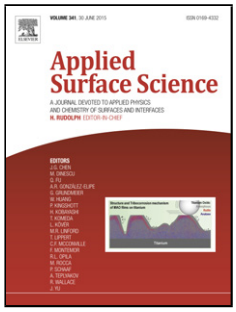

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Magnetic Resonance Image Segmentation Using Multifractal Techniques

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Abstract: In order to delineate target region for magnetic resonance image (MRI) with diseases, the classical multifractal spectrum (MFS)-segmentation method and latest multifractal detrended fluctuation spectrum (MF-DFS)-based segmentation method are employed in our study. One of our main conclusions from experiments is that both of the two multifractal-based methods are workable for handling MRIs. The best result is obtained by MF-DFS-based method using Lh_{10} as local characteristic. The anti-noises experiments also suppot the conclusion. This interest finding shows that the features can be better represented by the strong fluctuations instead of the weak fluctuations for the MRIs. By comparing the multifractal nature between lesion and non-lesion area on the basis of the segmentation results, an interest finding is that the gray value's fluctuation in lesion area is much severer than that in non-lesion area.

Keywords: Multifractal spectrum; multifractal detrended fluctuation spectrum; magnetic resonance image; image segmentation

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