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and azimuth estimation based on two-dimensional subspace algorithm in the infrasound monitoring

Infrasound monitoring is an effective method for monitoring the atmosphere and shallow explosions. And during the infrasound monitoring, the slowness and azimuth are very important for the infrasound signal propagation, location and infrasonic sources recognition. The common method for the slowness and azimuth is the frequency-wavenumber(FK) method, but when the FK is applied to the infrasound signal processing, the accuracy and resolution are not high, furthermore, this method can't identify multiple infrasound signals effectively. Based on the uncorrelation characteristic between the infrasound signal subspace and the noise subspace, the infrasonic two-dimensional subspace model is constructed, and then, a high-resolution calculation algorithm is proposed. The comparative analysis and the simulation experiments show that the proposed algorithm has better performance than the FK method in terms of resolution and has good discrimination results among two simultaneous infrasound sources.

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