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(54) **SYSTEM FOR RECONSTRUCTING MAGNETIC PARTICLE IMAGE BASED ON PRE-TRAINED MODEL**

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(58) **Field of Classification Search**
None
See application file for complete search history.

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(57) **ABSTRACT**

A system for reconstructing a magnetic particle image based on a pre-trained model aims to address the influence by point spread function and reduce the computational and time costs, which results in low reconstruction accuracy, or high acquisition time and computational costs for high-precision images. The system is implemented by: generating a simulation system matrix; pre-training a pre-constructed neural network model, and fine-tuning a pre-trained neural network model by performing a downstream task; and inputting real data corresponding to the downstream task into the pre-trained neural network model after fine-tuning, thereby playing an auxiliary role to acquire a high-quality reconstructed MPI image. The system fits the relationship between different harmonics, which helps enhance frequency-domain information. The system has certain universality and can be generalized to a plurality of downstream tasks related to MPI image reconstruction, thereby acquiring high-quality reconstructed images through simple model fine-tuning.

8 Claims, 7 Drawing Sheets