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Detection of material contrast in muon tomography data with machine learning

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Muon tomography applications often require detection of material contrast. One example of such application is the detection of contraband at the border. Another example is the detection of steel rebars inside reinforced concrete blocks. Sensitivity of material discrimination depends on the detector configuration, exposure time and clutter. We explore how machine learning techniques can be used to improve the muon imaging in general, and material discrimination in particular. We apply a variety of machine learning methods, including different types of regressions and image classification. Potential of these methods and their relative efficiency is discussed.

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