

Abstract Submitted  
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**Convolution Product And Lyapunov Stability In Medical Imaging** LESLIE UPTON, Hampton University, FOR CAMI COLLABORATION — Resolution is one of the most important aspects of any apparatus used in medical imaging. Several mathematical algorithms have been developed to best extract anatomical features and tumors within patients suffering from cancer diseases. Distortions of images are a result of blood flow, breathing, apparatus efficiency etc. This problem is also inherent to other disciplines in physics, like nuclear physics. Here, study of the electromagnetic nuclear structure relies in the extraction of the form factors from the nuclear medium (nucleus or nucleons). Data collected depend on a number of different variables. A new approach which consists of using the mathematical convolution product combined with the (entropy equivalent) Lyapunov stability was tested in this area of physics, since easier to implement. A deconvolution technique allowed isolating the individual dependencies of the differential cross section and extracting meson form factors of interest (pion and kaon). Preliminary results will be presented, as well as a discussion on the application of this technique to medical imaging.

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