

Abstract Submitted  
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**Resonant Inelastic X-ray Scattering in the Falicov-Kimball model**<sup>1</sup> NANDAN PAKHIRA, JAMES FREERICKS, Georgetown University, ANDRIJ SHVAIKA, Institute for Condensed Matter Physics of the National Academy of Sciences of Ukraine — We calculate Resonant Inelastic X-ray Scattering (RIXS) spectra in the Falicov-Kimball model. Using Dynamical Mean Field Theory (DMFT) we do a detailed study of the RIXS response as a function of incident photon energy ( $\omega_{in}$ ) or photon energy transfer ( $\Omega$ ) for various photon momentums transfer ( $\mathbf{q}$ ), temperature and other parameters of the model. We also calculate the dynamic structure factor,  $S(\mathbf{q}, \Omega)$ , for this model and study its possible relation with the RIXS spectra. We find that for large incident photon energy (much larger than the resonant energy) the resonant contribution to RIXS spectra essentially vanishes and  $S(\mathbf{q}, \Omega)$  is proportional to the non-resonant part of the response. Finally, time permitting, we will also present Auger life time broadening effects on the RIXS spectra.

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Nandan Pakhira  
Georgetown University

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