

REVIEWERS' COMMENTS:

Reviewer #1 (Remarks to the Author):

The authors in this Perspective presented current experimental and theoretical situations of time-resolved resonant-inelastic x-ray scattering (trRIXS) applied for quantum materials, followed by future applications of trRIXS for several phenomena in quantum materials. The trRIXS is one of quickly growing techniques in X-ray spectroscopy and many researchers in this field are interested in this technique as well as related theoretical treatments for nonequilibrium photoinduced phenomena. Therefore, I believe this Perspective is timely and benefits those who are working in RIXS and related fields.

Starting from Introduction, experimental and theoretical reviews at the preset stage are nicely described. Suggestions of new direction in trRIXS in Sec. IV are spin excitations, charge/orbital excitations, Mott insulating state, local orbital phenomena, and topological modes. These are definitely of interest for future experimental and theoretical issues in trRIXS. Related figures are also well presented. As a consequence, I would like to recommend the publication of the present manuscript in Perspective section in Communications Physics.

References 22 and 45 are wrongly placed in the main text.

Reviewer #2 (Remarks to the Author):

The manuscript is very well-written and serves as a good Perspectives article covering the topic of time-resolved RIXS. I find no fault with any of the scientific discussion, and couldn't even find any typos to correct. I recommend it for immediate publication with no changes.

Response to the Reviewers

Reviewer #1 (Remarks to the Author):

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Our Reply: We thank the Reviewer for their positive assessment of our manuscript and for recognizing its significance and timeliness. Concerning the placement of references 22 and 45 in the main text, the reviewer is correct: the references seem to appear before their discussion in the main text. This is the result of an incorrect placement of the figures in the .tex file to improve the document formatting and not of an actual oversight in the placement of references in the manuscript. We will amend this technical issue at the Proof stage.

Changes made: None.

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