

List of publications

Urs Staub

7.03.2024 5 most important publications red titles, No's. 109, 146, 198, 201, 271

2024

277. **4f ELECTRON TEMPERATURE DRIVEN ULTRAFAST ELECTRON LOCALIZATION**
Kohei Yamagami, Hiroki Ueda, *Urs Staub*, Yujun Zhang, Kohei Yamamoto, Sang Han Park, Soonnam Kwon, Akihiro Mitsuda, Hirofumi Wada, Takayuki Uozumi, Kojiro Mimura, and Hiroki Wadati, Phys. Rev. Research, in press (2024).
276. **TRANSIENT GRATING SPECTROSCOPY ON A DyCo₅ THIN FILM WITH FEMTOSECOND EXTREME ULTRAVIOLET PULSES**
Victor Ukleev, Ludmila Leroy, Riccardo Mincigrucci, Dario Deangelis, Danny Fainozzi, Nupur Ninad Khatu, Ettore Paltanin, Laura Foglia, Filippo Bencivenga, Chen Luo, Florian Ruske, Florin Radu, Cristian Svetina, and *Urs Staub*, Struc. Dyn. **11** (2024).
<https://doi.org/10.1063/4.0000223>

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275. **NON-EQUILIBRIUM DYNAMICS OF SPIN-LATTICE COUPLING**
Hiroki Ueda, Roman Mankowsky, Eugenio Paris, Mathias Sander, Yunpei Deng, Biaolong Liu, Ludmila Leroy, Abhishek Nag, Elizabeth Skoropata, Chennan Wang Victor Ukleev, Gérard Sylvester Perren, Janine Dössegger, Sabina Gurung, Cristian Svetina, Elsa Abreu, Matteo Savoini, Tsuyoshi Kimura, Luc Patthey, Elia Razzoli, Henrik Till Lemke, Steven Lee Johnson, and *Urs Staub*, Nature Commun. **14**, 7778 (2023).
<https://doi.org/10.1038/s41467-023-43581-9>
274. **COMBINED THEORETICAL AND EXPERIMENTAL STUDY OF THE MOIRÉ DISLOCATION NETWORK AT THE SrTiO₃-(La, Sr)(Al,Ta)O₃ INTERFACE**
Chiara Ricca, Elizabeth Skoropata, Marta D. Rossell, Rolf Erni, *Urs Staub*, and Ulrich Aschauer, ACS Applied Materials & Interfaces, **15**, 57638 (2023).
<https://doi.org/10.1021/acsami.3c10958>
273. **TRANSIENT NON-COLLINEAR MAGNETIC STATE FOR ALL-OPTICAL MAGNETIZATION SWITCHING**
Sergii Parchenko, Antoni Frej, Hiroki Ueda, Robert Carley, Laurent Mercadier, Natalia Gerasimova, Giuseppe Mercurio, Justine Schlappa, Alexander Yaroslavl'tsev, Naman Agarwal, Rafael Gort, Andreas Scherz, Anatoly Zvezdin, Andrzej Stupakiewicz, *Urs Staub*, Advanced Science **10**, 2302550 (2023). <https://doi.org/10.1021/acsami.3c10958>
272. **4D VISUALIZATION OF A NONTHERMAL COHERENT MAGNON IN THE LASER HEATED LATTICE BY AN X-RAY FREE ELECTRON LASER**
Hoyoung Jang, Hiroki Ueda, Hyeong-Do Kim, Minseok Kim, Kwang Woo Shin, Kee Hoon Kim, Sang-Youn Park, Hee Jun Shin, Pavel Borisov, Matthew J. Rosseinsky, Dogeun Jang, Hyeonggi Choi, Intae Eom, *Urs Staub* and Sae Hwan Chun, Advanced Materials, **35**, 2303032 (2023). DOI: 10.1002/adma.202303032

271. **CHIRAL PHONONS IN QUARTZ PROBED BY X RAYS**
Hiroki Ueda, Mirian García-Fernández, Stefano Agrestini, Carl P. Romao, Jeroen van den Brink, Nicola A. Spaldin, Ke-Jin Zhou, and *Urs Staub*, *Nature* **618**, 946 (2023). DOI: 10.1038/s41586-023-06016-5
270. **ANTIFERROMAGNETIC SPIN CANTING AND MAGNETOELECTRIC MULTIPOLES IN h-YMnO_3**
M. Ramakrishnan, Y. Joly, Q. N. Meier, M. Fechner, M. Porer, S. Parchenko, Y. W. Windsor, E. M. Bothschafter, F. Lichtenberg, and *Urs Staub*, *Phys. Rev. Research* **5**, 013203 (2023). DOI: 10.1103/PhysRevResearch.5.013203
269. **INVESTIGATING THE EFFECTS OF INTENSE X-RAY FREE-ELECTRON LASER TRANSIENT GRATING ON THE MAGNETIC DOMAIN STRUCTURE OF Tm:YIG**
Victor Ukleev, Max Burian, Sebastian Gliga, C.A.F. Vaz, Benedikt Rösner, Danny Fainozzi, Gediminas Seniutinas, Adam Kubec, Roman Mankowsky, Henrik T. Lemke, Ethan R. Rosenberg, Caroline A. Ross, Elisabeth Müller, Christian David, Cristian Svetina, and *Urs Staub*, *J. Appl. Phys.* **113**, 123902 (2023). DOI: 10.1063/5.0119241
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268. **PHOTOINDUCED STRUCTURAL DYNAMICS OF MULTIFERROIC TbMnO_3**
Elsa Abreu, Matteo Savoini, Larissa Boie, Paul Beaud, Vincent Esposito, Martin Kubli, Martin J. Neugebauer, Michael Porer, *Urs Staub*, Bulat Burganov, Chris Dornes, Angel Rodriguez-Fernandez, Lucas Huber, Gabriel Lantz, José R. L. Mardegan, Sergii Parchenko, Jochen Rittmann, Cris Svetina, Gerhard Ingold, and Steven L. Johnson, *Phys. Rev. B* **106**, 214312 (2022). DOI: 10.1103/PhysRevB.106.214312
267. **UNUSUAL FERRIMAGNETISM IN CaFe_2O_4**
Hiroki Ueda, Elizabeth Skoropata, Cinthia Piamonteze, Nazaret Ortiz Hernandez, Max Burian, Yoshikazu Tanaka, Klauser Christine, Silvia Damerio, Beatriz Noheda and, *Urs Staub*, *Phys. Rev. Materials* **6**, 124405 (2022). DOI: 10.1103/PhysRevMaterials.6.124405
266. **SLOPE ERROR CORRECTION ON X-RAY REFLECTION GRATINGS BY VARIATION OF THE LOCAL LINE DENSITY**
Adam Kubec, Nazanin Samadi, Manuel Langer, Florian Döring, Benedikt Rösner, Vitaliy A. Guzenko, Nazaret Ortiz Hernandez, *Urs Staub*, Rolf Follath, Jörg Raabe, and Christian David, *Optics Express* **30**, 46248 (2022). DOI: 10.1364/OE.471438
265. **MELTING OF MAGNETIC ORDER IN NaOsO_3 BY FEMTOSECOND LASER PULSES**
Flavio Giorgianni, Max Burian, Namrata Gurung, Martin Kubli, Vincent Esposito, *Urs Staub*, Paul Beaud, Steven L. Johnson, Yoav William Windsor, Laurenz Rettig, Dmitry Ozerov, Henrik Lemke, Susmita Saha, Federico Pressacco, Stephen Patrick Collins, Tadashi Togashi, Tetsuo Katayama, Shigeki Owada, Makina Yabashi, Kazunari Yamaura, Yoshikazu Tanaka, and V. Scagnoli, *Phys. Rev.* **B105**, 155147 (2022). DOI: 10.1103/PhysRevB.105.155147
264. **CONICAL SPIN ORDER WITH CHIRAL QUADRUPOLE HELIX IN CsCuCl_3**
Hiroki Ueda, Elizabeth Skoropata, Max Burian, Victor Ukleev, Gérard Sylvester Perren, Ludmila Leroy, Julien Zaccaro, and *Urs Staub*, *Phys. Rev.* **B105**, 144408 (2022). DOI: 10.1103/PhysRevB.105.144408

263. **OPTICAL EXCITATION OF ELECTROMAGNONS IN HEXAFERRITE**
Hiroki Ueda, Hoyoung Jang, Sae Hwan Chun, Hyeong-Do Kim, Minseok Kim, Sang-Youn Park, Simone Finizio, Nazaret Ortiz Hernandez, Vladimir Ovuka, Matteo Savoini, Tsuyoshi Kimura, Yoshikazu Tanaka, Andrin Doll, and *Urs Staub*, Phys. Rev. Research **4**, 023007 (2022). DOI: 10.1103/PhysRevResearch.4.023007
262. **ULTRAFAST PROBE OF MAGNETIZATION DYNAMICS IN MULTIFERROIC CoCr_2O_4 AND $\text{Co}_{0.975}\text{Ge}_{0.025}\text{Cr}_2\text{O}_4$**
S. Parchenko, N. Ortiz Hernández, M. Savoini, M. Porer, M. Decker, B. Burganov, E. M. Bothschafter, C. Dornes, Y. W. Windsor, M. Ramakrishnan, L. Rettig, M. Buzzi, D. Schick, K. Holldack, N. Pontius, C. Schüssler-Langeheine, M. Radovic, J. A. Heuver, B. Noheda, S. L. Johnson, and *U. Staub*, Phys. Rev. B **105**, 064432 (2022).
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261. **EXCHANGE SCALING OF ULTRAFAST ANGULAR MOMENTUMTRANSFER IN 4f ANTIFERROMAGNETS**
Y. W. Windsor, S.-E. Lee, D. Zahn, V. Borisov, D. Thonig, K. Kliemt, A. Ernst, C. Schüssler-Langeheine, N. Pontius, *U. Staub*, C. Krellner, D. V. Vyalikh, O. Eriksson and L. Rettig, Nature Materials **21**, 515 (2022), <https://doi.org/10.1038/s41563-022-01206-4>
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260. **ANTI-SYMMETRIC COMPTON SCATTERING IN LiNiPO_4 : TOWARDS A DIRECT PROBE OF THE MAGNETO-ELECTRIC MULTIPOLE MOMENT**
Sayantika Bhowal, Daniel O'Neill, Michael Fechner, Nicola A. Spaldin, *Urs Staub*, Jon Duffy, and Stephen P. Collins, Open Research Europe, (2021)
<https://doi.org/10.12688/openreseurope.13863.1>
259. **ULTRAFAST ELECTRON LOCALIZATION IN THE $\text{EuNi}_2(\text{Si}_{0.21}\text{Ge}_{0.79})_2$ CORRELATED METAL**
Jose R. L. Mardegan, Serhane Zerdane, Giulia Mancini, Vincent Esposito, Jérémy R. Rouxel, Roman Mankowsky, Cristian Svetina, Namrata Gurung, Sergii Parchenko, Michael Porer, Bulat Burganov, Yunpei Deng, Paul Beaud, Gerhard Ingold, Bill Pedrini, Christopher Arrell, Christian Erny, Andreas Dax, Henrik Lemke, Martin Decker, Nazaret Ortiz, Chris Milne, Grigory Smolentsev, Laura Maurel, Steven L. Johnson, Akihiro Mitsuda, Hirofumi Wada, Yuichi Yokoyama, Hiroki Wadati, and *Urs Staub*, Phys. Rev. Research **3**, 033211 (2021). <https://doi.org/10.1103/PhysRevResearch.3.033211>
258. **MAGNETIC ORDER OF TETRAGONAL CuO ULTRATHIN FILMS**
N. Ortiz Hernández, Z. Salman, T. Prokscha, A. Suter, J. R. L. Mardegan, S. Moser, A. Zakharova, C. Piamonteze, and *U. Staub*, Phys. Rev. B **103**, 224429 (2021).
<https://doi.org/10.1103/PhysRevB.103.224429>
257. **NONEQUILIBRIUM CHARGE-DENSITY-WAVE ORDER BEYOND THE THERMAL LIMIT**
J. Maklar, Y. W. Windsor, C. W. Nicholson, M. Puppini, P. Walmsley, V. Esposito, M. Porer, J. Rittmann, D. Leuenberger, M. Kubli, M. Savoini, E. Abreu, S. L. Johnson, P.

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256. **HARD X-RAY TRANSIENT GRATING SPECTROSCOPY ON BISMUTH GERMANATE**
Jérémy R. Rouxel, Danny Fainozzi, Roman Mankowsky, Benedikt Rösner, Gediminas Seniutinas, Riccardo Mincigrucci, Sara Catalini, Laura Foglia, Riccardo Cucini, Florian Döring, Adam Kubec, Frieder Koch, Filippo Bencivenga, Andre Al Haddad, Alessandro Gessini, Alexei A. Maznev, Claudio Cirelli, Simon Gerber, Bill Pedrini, Giulia F. Mancini, Elia Razzoli, Max Burian, Hiroki Ueda, Georgios Pamfilidis, Eugenio Ferrari, Yunpei Deng, Aldo Mozzanica, Philip Johnson, Dmitry Ozerov, Maria Grazia Izzo, Cettina Bottari, Christopher Arrell, Edwin James Divall, Serhane Zerdane, Mathias Sander, Gregor Knopp, Paul Beaud, Henrik Till Lemke, Chris J. Milne, Christian David, Renato Torre, Majed Chergui, Keith A. Nelson, Claudio Masciovecchio, *Urs Staub*, Luc Patthey and Cristian Svetina, Nature Photonics **15**, 499 (2021). <https://doi.org/10.1038/s41566-021-00797-9>

255. **CORRELATION BETWEEN ELECTRONIC AND STRUCTURAL ORDERS IN 1T-TiSe₂**
Hiroki Ueda, Michael Porer, José R. L. Mardegan, Sergii Parchenko, Namrata Gurung, Federica Fabrizi, Mahesh Ramakrishnan, Larissa Boie, Martin Josef Neugebauer, Bulat Burganov, Max Burian, Steven Lee Johnson, Kai Rossnagel, and *Urs Staub*, Phys. Rev. Research **3**, L022003 (2021).

254. **BURIED MOIRÉ SUPERCELLS THROUGH SrTiO₃ NANOLAYER RELAXATION**
Max Burian, Bill Francesco Pedrini, Nazaret Ortiz Hernandez, Hiroki Ueda, C. A. F. Vaz, Marco Caputo, Milan Radovic, and *Urs Staub*, Phys. Rev. Research **3**, 013225 (2021). <https://doi.org/10.1103/PhysRevResearch.3.L022003>

253. **MAGNETIC FIELD DEPENDENT CYCLOIDAL ROTATION IN PRISTINE AND GE DOPED CoCr₂O₄**
N. Ortiz Hernandez, S. Parchenko, J. R. L. Mardegan, M. Porer, E. Schierle, E. Weschke, M. Ramakrishnan, M. Radovic, J. A. Heuver, B. Noheda, N. Daffe, J. Dreiser, H. Ueda and *U. Staub*, Phys. Rev. B **103**, 085123 (2021).

252. **STRUCTURAL INVOLVEMENT IN THE MELTING OF THE CHARGE DENSITY WAVE IN 1T-TiSe₂**
Max Burian, Michael Porer, Jose R. L. Mardegan, Vincent Esposito, Sergii Parchenko, Bulat Burganov, Namrata Gurung, Mahesh Ramakrishnan, Valerio Scagnoli, Hiroki Ueda, Sonia Francoual, Federica Fabrizi, Yoshikazu Tanaka, Tadashi Togashi, Yuya Kubota, Makina Yabashi, Kai Rossnagel, Steven L. Johnson, and *Urs Staub*, Phys. Rev. Research **3**, 013128 (2021).

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251. **MULTIPLE MAGNETIC ORDERING PHENOMENA IN MULTIFERROIC o-HoMnO₃**
Y. W. Windsor, M. Ramakrishnan, L. Rettig, A. Alberca, T. Lippert, C. W. Schneider and *Urs Staub*, Phys. Rev. B **102**, 214423 (2020).

250. **SOFT X-RAY ABSORPTION OF THIN FLMS DETECTED USING SUBSTRATE LUMINESCENCE: A PERFORMANCE ANALYSIS**

Cinthia Piamonteze, Yoav William Windsor, Sridhar R. V. Avula, Eugenie Kirk and *Urs Staub*, J. Synch. Rad. **27**, 1289 (2020). <https://doi.org/10.1107/S1600577520009972>

249. **EVOLUTION OF FELD-INDUCED METASTABLE PHASES IN THE SHASTRY-SUTHERLAND LATTICE MAGNET TmB_4**

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248. **DETERMINISTIC CONTROL OF AN ANTIFERROMAGNETIC SPIN ARRANGEMENT USING ULTRAFAST OPTICAL EXCITATION**

Yoav Windsor, Arthur Ernst, Kurt Kummer, Kristin Kliemt, Christian Schuessler-Langeheine, Niko Pontius, *Urs Staub*, Evgueni Chulkov, Cornelius Krellner, Denis Vyalikh, and Laurenz Rettig, Communications Phys. **3**, 139 (2020). <https://doi.org/10.1038/s42005-020-00407-0>

247. **ORBITAL DYNAMICS DURING AN ULTRAFAST INSULATOR TO METAL TRANSITION**

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246. **CORRELATIONS BETWEEN ELECTRONIC ORDER AND STRUCTURAL DISTORTIONS AND THEIR ULTRAFAST DYNAMICS IN THE SINGLE-LAYER MANGANITE $\text{Pr}_{0.5}\text{Ca}_{1.5}\text{MnO}_4$**

M. Porer, L. Rettig, , E. M. Bothschafter, V. Esposito, , R. B. Versteeg, P. H. M. van Loosdrecht, M. Savoini, J. Rittmann, M. Kubli, G. Lantz, O. J. Schumann, , A. A. Nugroho, M. Braden, G. Ingold, S. L. Johnson, P. Beaud, and *U. Staub*, Phys. Rev. B **101**, 075119 (2020). <https://doi.org/10.1103/PhysRevB.101.075119>

245. **COHERENT EPITAXIAL SEMICONDUCTOR - FERROMAGNETIC INSULATOR InAs/EuS INTERFACES: BAND ALIGNMENT AND MAGNETIC STRUCTURE**

Yu Liu, Alessandra Luchini, Sara Martí-Sánchez, Christian Koch, Sergej Schuwalow, Sabbir A. Khan, Tomaš Stankevič, Sonia Francoual, Jose R. L. Mardegan, Jonas A. Krieger, Vladimir N. Strocov, Jochen Stahn, Carlos A. F. Vaz, Mahesh Ramakrishnan, *Urs Staub*, Kim Lefmann, Gabriel Aeppli, Jordi Arbiol, Peter Krogstrup, ACS Appl. Mater. Interfaces **12**, 8780 (2020). <https://doi.org/10.1021/acsami.9b15034>

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244. **FIELD-INDUCED DOUBLE SPIN SPIRAL IN A FRUSTRATED CHIRAL MAGNET**

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243. ULTRAFAST TRANSIENT INCREASE OF OXYGEN OCTAHEDRAL ROTATIONS IN A PEROVSKITE

M. Porer, M. Fechner, M. Kubli, M. J. Neugebauer, S. Parchenko, V. Esposito, A. Narayan, N. A. Spaldin, R. Huber, M. Radovic, E. M. Bothschafter, J. M. Glowia, T. Sato, S. Song, S. L. Johnson, and *U. Staub*, Phys. Rev. Research **1**, 2012005(R) (2019).

242. CONTINUOUS MAGNETIC PHASE TRANSITION IN ARTIFICIAL SQUARE ICE

Oles Sendetskyi, Valerio Scagnoli, Naëmi Leo, Luca Anghinolfi, Aurora Alberca, Jan Lüning, *Urs Staub*, Peter Michael Derlet, and Laura Jane Heyderman, Phys. Rev. B **99**, 214430 (2019).

241. MAGNETIC AND ELECTRONIC PROPERTIES AT THE γ -Al₂O₃/SrTiO₃ INTERFACE

J. R. L. Mardegan, D. V. Christensen, Y. Z. Chen, S. Parchenko, S. R. V. Avula, N. Ortiz-Hernandez, M. Decker, C. Piamonteze, N. Pryds, and *U. Staub*, Phys. Rev. B **99**, 134423 (2019).

240. DISENTANGLING CHARGE AND STRUCTURAL CONTRIBUTIONS DURING COHERENT ATOMIC MOTIONS STUDIED BY ULTRAFAST RESONANT X-RAY DIFFRACTION

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240. TERAHERTZ-DRIVEN PHONON UPCONVERSION IN SrTiO₃

M. Kozina, M. Fechner, P. Marsik, T. van Driel, J. M. Glowia, C. Bernhard, M. Radovic, D. Zhu, S. Bonetti, *U. Staub* and M. C. Hoffmann, Nature Physics **15**, 387 (2019).

239. THE ULTRAFAST EINSTEIN-DE HAAS EFFECT

C. Dornes, Y. Acremann, M. Savoini, M. Kubli, M. J. Neugebauer, E. Abreu, L. Huber, G. Lantz, C. A. F. Vaz, H. Lemke, E. M. Bothschafter, M. Porer, V. Esposito, L. Rettig, M. Buzzi, A. Alberca, Y. W. Windsor, P. Beaud, *U. Staub*, Diling Zhu, Sanghoon Song, J. M. Glowia & S. L. Johnson, Nature **565**, 209 (2019).

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Martin Kubli, Matteo Savoini, Elsa Abreu, Bulat Burganov, Gabriel Lantz, Lucas Huber, Martin J. Neugebauer, Larissa Boie, Vincent Esposito, Elisabeth M. Bothschafter, Sergii Parchenko, Sebastian Grübel, Michael Porer, Jochen Rittmann, Paul Beaud, *Urs Staub*, Makina Yabashi, Yoshikazu Tanaka, Tetsuo Katayama, Tadashi Togashi, Anton A. Kohutych, Yulian M. Vysochanskii and Steven L. Johnson, Appl. Sci. **9**, 525 (2019).

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 Vincent Esposito, Laurenz Rettig, Elisabeth M. Bothschafter, Yunpei Deng, Christian Dornes, Lucas Huber, Tim Huber, Gerhard Ingold, Yuichi Inubushi, Tetsuo Katayama, Tomoya Kawaguchi, Henrik Lemke, Kanade Ogawa, Shigeki Owada, Milan Radovic, Mahesh Ramakrishnan, Zoran Ristic, Valerio Scagnoli, Yoshikazu Tanaka, Tadashi Togashi, Kensuke Tono, Ivan Usov, Yoav W. Windsor, Makina Yabashi, Steven L. Johnson, Paul Beaud, and *Urs Staub*, *Struct. Dyn.* **5**, 064501 (2018).
236. **MULTIFERROIC PHASE DIAGRAM OF E-TYPE RMnO₃ FILMS STUDIED BY NEUTRON AND X-RAY DIFFRACTION**
 Saumya Mukherjee, Kenta Shimamoto, Yoav William Windsor, Mahesh Ramakrishnan, Sergii Parchenko, *Urs Staub*, Laurent Chapon, Bachir Ouladdiaf, Marisa Medarde, Tian Shang, Elisabeth A. Müller, Michel Kenzelmann, Thomas Lippert, Christof W. Schneider, and Christof Niedermayer, *Phys. Rev. B* **98**, 174416 (2018).
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 N. S. Fedorova, Y. W. Windsor, C. Findler, M. Ramakrishnan, A. Bortis, L. Rettig, K. Shimamoto, E. M. Bothschafter, M. Porer, V. Esposito, Y. Hu, A. Alberca, T. Lippert, C. W. Schneider, *U. Staub*, and N. A. Spaldin, *Phys. Rev. Materials* **2**, 104414 (2018).
234. **DIRECT OBSERVATION OF ELECTRON DENSITY RECONSTRUCTION AT THE METAL-INSULATOR TRANSITION IN NaOsO₃**
 N. Gurung, N. Leo, S. P. Collins, G. Nisbet, G. Smolentsev, M. García-Fernández, K. Yamaura, L. J. Heyderman, *U. Staub*, Y. Joly, D. D. Khalyavin, S. W. Lovesey and V. Scagnoli, *Phys. Rev. B* **98**, 115116 (2018).
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232. **SPATIAL DISPLACEMENT OF FORWARD-DIFFRACTED X-RAY BEAMS BY PERFECT CRYSTALS**
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231. **PHOTOINDUCED TRANSITIONS IN MAGNETORESISTIVE MANGANITES: A COMPREHENSIVE VIEW**
 V. Esposito, L. Rettig, E. Abreu, E. M. Bothschafter, G. Ingold, M. Kawasaki, M. Kubli, G. Lantz, M. Nakamura, J. Rittman, M. Savoini, Y. Tokura, *U. Staub*, S. L. Johnson, and P. Beaud, *Phys. Rev. B* **97**, 014312 (2018).

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Peter Hamm, Markus Meuwly, Steve L. Johnson, Paul Beaud, and *Urs Staub*, *Struct. Dyn.* **4**, 061601 (2017).
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