

## List of publications

Urs Staub

2.04.2019 5 most important publications red titles, No's. 109, 146, 176, 198, 201

2019

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

L. Rettig, A. Caviezel, S. O. Mariager, G. Ingold, C. Dornes, S-W. Huang, J. A. Johnson, M. Radovic, T. Huber, T. Kubacka, A. Ferrer, H. T. Lemke, M. Chollet, D. Zhu, J. M. Glowia, M. Sikorski, A. Robert, M. Nakamura, M. Kawasaki, Y. Tokura, S. L. Johnson, P. Beaud, and U. Staub, Phys. Rev. B **in press**.

240. **TERAHERTZ-DRIVEN PHONON UPCONVERSION IN SrTiO<sub>3</sub>**

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 Phys. **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).

238. **KINETICS OF A PHONON-MEDIATED LASER-DRIVEN STRUCTURAL PHASE TRANSITION IN Sn<sub>2</sub>P<sub>2</sub>Se<sub>6</sub>**

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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237. **DYNAMICS OF THE PHOTOINDUCED INSULATOR-TO-METAL TRANSITION IN A NICKELATE FILM**

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. B **5**, 064501 (2018).

236. **RELATIONSHIP BETWEEN CRYSTAL STRUCTURE AND MULTIFERROIC ORDERS IN ORTHORHOMBIC PEROVSKITE MANGANITES**

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).

235. **RELATIONSHIP BETWEEN CRYSTAL STRUCTURE AND MULTIFERROIC ORDERS IN ORTHORHOMBIC PEROVSKITE MANGANITES**  
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 NaOsO<sub>3</sub>**  
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).
233. **ULTRAFAST RELAXATION DYNAMICS OF THE ANTIFERRODISTORTIVE PHASE IN Ca DOPED SrTiO<sub>3</sub>**  
M. Porer, M. Fechner, E. Bothschafter, L. Rettig, M. Savoini, V. Esposito, J. Rittmann, M. Kubli, M. J. Neugebauer, E. Abreu, T. Kubacka, T. Huber, G. Lantz, S. Parchenko, S. Gröbel, A. Paarmann, Noack, P. Beaud, G. Ingold, U. Aschauer, S. L. Johnson, and *U. Staub*, *Phys. Rev. Lett.* **121**, 055701 (2018).
232. **SPATIAL DISPLACEMENT OF FORWARD-DIFFRACTED X-RAY BEAMS BY PERFECT CRYSTALS**  
A. Rodriguez-Fernandez, V. Esposito, D. F. Sanchez, K. D. Finkelstein, P. Juranic, *U. Staub*, D. Grolimund, S. Reiche and B. Pedrini, *Acta Cryst.* **A74**, 75 (2018).
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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230. **PERSPECTIVE: OPPORTUNITIES FOR ULTRAFAST SCIENCE AT SWISSFEL**  
Rafael Abela, Paul Beaud, Jeroen A. van Bokhoven, Majed Chergui, Thomas Feuerer, Johannes Haase, Gerhard, Ingold, Steven L. Johnson, Gregor Knopp, Henrik Lemke, Chris J. Milne, Bill Pedrini, Peter Radi, Gebhard, Schertler, Jörg Standfuss, *Urs Staub*, and Luc Patthey, *Struct. Dyn.* **4**, 061602 (2017).
229. **WATCHING ULTRAFAST RESPONSES OF STRUCTURE AND MAGNETISM IN CONDENSED MATTER WITH MOMENTUM-RESOLVED PROBES**  
S. L. Johnson, M. Savoini, P. Beaud, G. Ingold, *U. Staub*, F. Carbone, L. Castiglioni, M. Hengsberger, and J. Osterwalder, *Struct. Dyn.* **4**, 061506 (2017).
228. **PERSPECTIVE: THz-DRIVEN NUCLEAR DYNAMICS FROM SOLIDS TO MOLECULES**  
Peter Hamm, Markus Meuwly, Steve L. Johnson, Paul Beaud, and *Urs Staub*, *Struct. Dyn.* **4**, 061601 (2017).
227. **DYNAMIC PATHWAY OF THE PHOTOINDUCED PHASE TRANSITION OF TbMnO<sub>3</sub>**

Elisabeth M. Bothschafter, Elsa Abreu, Laurenz Rettig, Teresa Kubacka, Sergii Parchenko, Michael Porer, Christian Dornes, Yoav William Windsor, Mahesh Ramakrishnan, Aurora Alberca, Sebastian Manz, Jonathan Saari, Seyed M. Koohpayeh, Manfred Fiebig, Thomas Forrest, Philipp Werner, Sarnjeet S. Dhesi, Steven L. Johnson, and *Urs Staub*, Phys. Rev. B **96**, 184414 (2017).

226. **INTERPLAY OF Fe AND Tm MOMENTS THROUGH THE SPIN-REORIENTATION TRANSITION IN TmFeO<sub>3</sub>**

*U. Staub*, L. Rettig, E. M. Bothschafter, Y. W. Windsor, M. Ramakrishnan, S. R. V. Avula, J. Dreiser, C. Piamonteze, V. Scagnoli, S. Mukherjee, C. Niedermayer, M. Medarde, and E. Pomjakushina, Phys. Rev. B **96**, 174408 (2017).

225. **NONLINEAR ELECTRON-PHONON COUPLING IN DOPED MANGANITES**

V. Esposito, M. Fechner, R. Mankowsky, H. Lemke, M. Chollet, J.M. Glowia, M. Nakamura, M. Kawasaki, Y. Tokura, *U. Staub*, P. Beaud, and M. Först, Phys. Rev. Lett. **118**, 247601 (2017).

224. **MAGNETIC PROPERTIES OF STRAINED MULTIFERROIC CoCr<sub>2</sub>O<sub>4</sub>: A soft x-ray study**

Y. W. Windsor, C. Piamonteze, M. Ramakrishnan, A. Scaramucci, L. Rettig, J. A. Huever, E. M. Bothschafter, N. S. Bingham, A. Alberca, S. R. V. Avula, B. Noheda, and *U. Staub*, Phys. Rev. B **95**, 224413 (2017).

223. **CRYSTAL SYMMETRY LOWERING IN CHIRAL MULTIFERROIC Ba<sub>3</sub>TaFe<sub>3</sub>Si<sub>2</sub>O<sub>14</sub> OBSERVED BY X-RAY MAGNETIC SCATTERING**

M. Ramakrishnan, Y. Joly, Y. W. Windsor, L. Rettig, A. Alberca, E. M. Bothschafter, P. Lejay, R. Ballou, V. Simonet, V. Scagnoli, and *U. Staub*, Phys. Rev B **95**, 205145 (2017).

222. **ULTRAFAST X-RAY DIFFRACTION PROBE OF TERAHERTZ FIELD-DRIVEN SOFT MODE DYNAMICS IN SrTiO<sub>3</sub>**

M. Kozina, T. van Driel, M. Chollet, T. Sato, J. M. Glowia, S. Wandel, M. Radovic, *U. Staub*, and M. C. Hoffmann, Struct. Dyn. **4**, 054301 (2017).

221. **LOCAL TERAHERTZ FIELD ENHANCEMENT FOR TIME-RESOLVED X-RAY DIFFRACTION**

M. Kozina, M. Pancaldi, C. Bernhard, T. van Driel, J. M. Glowia, P. Marsik, M. Radovic, C. A. F. Vaz, D. Zhu, S. Bonetti, *U. Staub*, and M. C. Hoffmann, Appl. Phys. Lett. **110**, 081106 (2017).

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220. **FERROMAGNETIC AND ANTIFERROMAGNETIC ORDERS OF A PHASE-SEPARATED MANGANITE PROBED THROUGH OUT THE B-T PHASE DIAGRAM**

Y. W. Windsor, Yoshikazu Tanaka, V. Scagnoli, M. Garganourakis, R. A. de Souza, M. Medarde, S.-W. Cheong, and *U. Staub*, Phys. Rev. B **94**, 214412 (2016).

219. **MAGNETIC DIFFUSE SCATTERING IN ARTIFICIAL KAGOME SPIN ICE**

O. Sendetskyi, L. Anghinolfi, V. Scagnoli, G. Möller, N. Leo, A. Alberca, J. Kohlbrecher, J. Lüning, *U. Staub*, and L. J. Heyderman, Phys. Rev. B **93**, 224413 (2016).

218. **ITINERANT AND LOCALIZED MAGNETIZATION DYNAMICS IN ANTIFERROMAGNETIC Ho**  
L. Rettig, C. Dornes, N. Thielemann-Kühn, N. Pontius, H. Zabel, D. L. Schlagel, T. A. Lograsso, M. Chollet, A. Robert, M. Sikorski, S. Song, J. M. Glowina, C. Schüßler-Langeheine, S. L. Johnson, and *U. Staub*, *Phys. Rev. Lett.* **116**, 257202 (2016).
217. **QUASISTATIC MAGNETOELECTRIC MULTIPOLES AS ORDER PARAMETER FOR PSEUDOGAP PHASE IN CUPRATE SUPERCONDUCTORS**  
M. Fechner, M. J. A. Fierz, F. Thöle, *U. Staub*, and N. A. Spaldin, *Phys. Rev. B* **93**, 174419 (2016).
216. **ULTRAFAST STRUCTURAL DYNAMICS OF THE ORTHORHOMBIC DISTORTION IN THE FE-PNICTIDE PARENT COMPOUND BaFe<sub>2</sub>As<sub>2</sub>**  
L. Rettig, S. O. Mariager, A. Ferrer, S. Grübel, J. A. Johnson, J. Rittmann, T. Wolf, S. L. Johnson, G. Ingold, P. Beaud, and *U. Staub*, *Struc. Dyn.* **3**, 023611 (2016).
215. **MULTIFERROIC PROPERTIES OF UNIAXIALLY COMPRESSED ORTHORHOMBIC HoMnO<sub>3</sub> THIN FILMS**  
K. Shimamoto, Y. W. Windsor, Y. Hu, M. Ramakrishnan, A. Alberca, E. M. Bothschafter, L. Rettig, Th. Lippert, *U. Staub*, and C. W. Schneider, *Appl. Phys. Lett.* **108**, 112904 (2016)
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214. **MAGNETIC ORDER DYNAMICS IN OPTICALLY EXCITED MULTIFERROIC TbMnO<sub>3</sub>**  
J. A. Johnson, T. Kubacka, M. C. Hoffmann, C. Vicario, S. de Jong, P. Beaud, S. Grübel, S.-W. Huang, L. Huber, Y. W. Windsor, E. M. Bothschafter, L. Rettig, M. Ramakrishnan, A. Alberca, L. Patthey, Y.-D. Chuang, J. J. Turner, G. L. Dakovski, W.-S. Lee, M. P. Minitti, W. Schlotter, R. G. Moore, C. P. Hauri, S. M. Koohpayeh, V. Scagnoli, G. Ingold, S. L. Johnson, and *U. Staub*, *Phys. Rev. B*, **92**, 184429 (2015).
213. **MAGNETOELECTRONICS—ELECTRIC FIELD CONTROL OF MAGNETISM IN THE SOLID STATE**  
C. A. F. Vaz and *U. Staub*, *J. Phys. Condensed Matt.*, **27** 500301 (2015).
212. **ELEMENT-SPECIFIC MAGNETIZATION REDISTRIBUTION AT YBa<sub>2</sub>Cu<sub>3</sub>O<sub>7</sub>/La<sub>2/3</sub>Ca<sub>1/3</sub>MnO<sub>3</sub> INTERFACES**  
A. Alberca, M. A. Uribe-Laverde, Y. W. Windsor, M. Ramakrishnan, L. Rettig, I. Marozau, J.-M. Tonnerre, J. Stahn, *U. Staub*, and C. Bernhard, *Phys. Rev. B*, **92**, 174415 (2015).
211. **COHERENT ACOUSTIC PERTURBATION OF SECOND-HARMONIC-GENERATION IN NiO**  
L. Huber, A. Ferrer, T. Kubacka, T. Huber, C. Dornes, T. Sato, K. Ogawa, K. Tono, T. Katayama, Y. Inubushi, M. Yabashi, Yoshikazu Tanaka, P. Beaud, M. Fiebig, V. Scagnoli, *U. Staub*, and S. L. Johnson, *Phys. Rev. B*, **92**, 094304 (2015).
210. **EMITTING ELECTRONS THROUGH PHONONS**  
Valerio Sagnoli and *Urs Staub*, *News and Views, Nature Mater.* **14**, 859 (2015).
209. **INTERFACIAL PROPERTIES OF LaMnO<sub>3</sub>/LaNiO<sub>3</sub> SUPERLATTICES GROWN ALONG**

### **(001) AND (111) ORIENTATIONS**

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208. **FERRO-TYPE ORDER OF MAGNETO-ELECTRIC QUADRUPOLES AS AN ORDER-PARAMETER FOR THE PSEUDO-GAP PHASE OF A CUPRATE SUPERCONDUCTOR**  
S. W. Lovesey, D. D. Khalyavin, and *U. Staub*, *J. Phys. Condens. Matter (fast track)* **27**, 292201 (2015).

207. **INTERPLAY BETWEEN MAGNETIC ORDER AT Mn AND Tm SITES ALONGSIDE THE STRUCTURAL DISTORTION IN MULTIFERROIC FILMS OF  $\alpha$ -TmMnO<sub>3</sub>**  
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206. **FERMI SURFACE OF THREE-DIMENSIONAL  $\text{La}_{1-x}\text{Sr}_x\text{MnO}_3$  EXPLORED BY SOFT-X-RAY ARPES: RHOMBOHEDRAL LATTICE DISTORTION AND ITS EFFECT ON MAGNETORESISTANCE**  
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205. **COMBINING THz LASER EXCITATION WITH RESONANT SOFT X-RAY SCATTERING AT THE LINAC COHERENT LIGHT SOURCE**  
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204. **NONLINEAR DELAYED SYMMETRY BREAKING IN A SOLID EXCITED BY HARD X-RAY FEL PULSES**  
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203. **ULTRAFAST STRUCTURAL DYNAMICS OF THE Fe-PNICTIDE PARENT COMPOUND  $\text{BaFe}_2\text{As}_2$**   
L. Rettig, S. O. Mariager, A. Ferrer, S. Grübel, J. A. Johnson, J. Rittmann, T. Wolf, S. L. Johnson, G. Ingold, P. Beaud, and *U. Staub*, *Phys. Rev. Lett.* **114**, 067402 (2015).

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202. **MULTIFERROIC PROPERTIES OF  $\alpha$ -LuMnO<sub>3</sub> CONTROLLED BY B-AXIS STRAIN**  
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201. **A TIME-DEPENDENT ORDER PARAMETER FOR ULTRAFAST PHOTO-INDUCED PHASE TRANSITIONS**  
P. Beaud, A. Caviezel, S. O. Mariager, L. Rettig, G. Ingold, C. Dornes, S-W. Huang, J. A. Johnson, M. Radovic, T. Huber, T. Kubacka, A. Ferrer, H. T. Lemke, M. Chollet, D. Zhu, J. M. Glowia, M. Sikorski, A. Robert, H. Wadati, M. Nakamura, M. Kawasaki, Y. Tokura, S.

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200. **ORBITAL CORRELATIONS AND DIMENSIONAL CROSSOVER IN EPITAXIAL  $\text{Pr}_{0.5}\text{Ca}_{0.5}\text{MnO}_3/\text{La}_{0.5}\text{Sr}_{0.5}\text{MnO}_3$  SUPERLATTICES**

H. Wadati, J. Okamoto, M. Garganourakis, V. Scagnoli, *U. Staub*, E. Sakai, H. Kumigashira, T. Sugiyama, E. Ikenaga, M. Nakamura, M. Kawasaki and Y. Tokura, N. J. Phys. **16**, 073044 (2014).

199. **PERSISTENCE OF MAGNETIC ORDER IN A HIGHLY EXCITED  $\text{Cu}^{2+}$  STATE IN  $\text{CuO}$**

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198. **LARGE AMPLITUDE SPIN DYNAMICS DRIVEN BY A THz PULSE IN RESONANCE WITH AN ELECTROMAGNON**

T. Kubacka, J.A. Johnson, M.C. Hoffmann, C. Vicario, S. de Jong, P. Beaud, S. Grübel, S.-W. Huang, L. Huber, L. Patthey, Y.-D. Chuang, J.J. Turner, G.L. Dakovski, W.-S. Lee, M.P. Minitti, W. Schlotter, R.G. Moore, C.P. Hauri, S.M. Koohpayeh, V. Scagnoli, G. Ingold, S.L. Johnson and *U. Staub*, Science **343**,1333 (2014).

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197. **CHIRAL PROPERTIES OF HEMATITE  $\alpha\text{-Fe}_2\text{O}_3$  INFERRED FROM RESONANT BRAGG DIFFRACTION USING CIRCULARLY POLARIZED X - RAYS**

A. Rodríguez-Fernández, J. A. Blanco, S. W. Lovesey, V. Scagnoli, *U. Staub*, H. C. Walker, D. K. Shukla, and J. Stremper, Phys. Rev B **88**, 094437 (2013).

196. **DZHALOSHINSKY-MORIYA DRIVEN HELICAL-BUTTERFLY STRUCTURE IN  $\text{Ba}_3\text{NbFe}_3\text{Si}_2\text{O}_{14}$**

V. Scagnoli, S. W. Huang, M. Garganourakis, R. A. de Souza, and *U. Staub*, V. Simonet, P. Lejay, and R. Ballou, Phys. Rev B **88**, 104417 (2013).

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Carlos Antonio Fernandes Vaz and *Urs Staub*, Journal of Materials Chemistry C, (highlight) J. Mater. Chem. C **1**, 6731 (2013).

194. **MELTING OF CHIRAL ORDER IN TERBIUM MANGANATE ( $\text{TbMnO}_3$ ) OBSERVED WITH RESONANT X-RAY BRAGG DIFFRACTION**

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193. **IDENTIFICATION OF COHERENT LATTICE MODULATIONS COUPLED TO CHARGE AND ORBITAL ORDER IN A MANGANITE**

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192. **OPTICAL AND X-RAY TIME RESOLVED STUDY OF THE STRUCTURAL TRANSITION**

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190. **IMPRINTING MAGNETIC INFORMATION IN MANGANITES WITH X-RAYS**

M. Garganourakis, V. Scagnoli, S. W. Huang, H. Wadati, M. Nakamura, V. A. Guzenko, M. Kawasaki, Y. Tokura and *U. Staub*, Phys. Rev. Lett, **109**, 157203 (2012).

189. **MAGNETIC AND ELECTRONIC ORDERINGS IN ORTHORHOMBIC  $R\text{MnO}_3$  ( $R = \text{Tm}, \text{Lu}$ ) STUDIED BY RESONANT SOFT X-RAY POWDER DIFFRACTION**

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188. **EVOLUTION OF CHARGE ORDER THROUGH THE MAGNETIC PHASE TRANSITION OF  $\text{LuFe}_2\text{O}_4$**

M. Bartowiak, A. M. Mulders, V. Scagnoli, *U. Staub*, E. Pomjakushina, and K. Conder, Phys. Rev. B **86**, 035121 (2012).

187. **INHOMOGENEOUS TEMPERATURE DEPENDENCE OF THE MAGNETIZATION IN FCC-Fe ON  $\text{Cu}(001)$**

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186. **ACENTRIC MAGNETIC AND OPTICAL PROPERTIES OF CHALCOPYRITE ( $\text{CuFeS}_2$ )**

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185. **FERROMAGNETIC-TYPE ORDER OF ATOMIC MULTIPOLES IN THE POLAR FERRIMAGNETIC  $\text{GaFeO}_3$**

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