

## **Dr. Jan Kuneš**

Date of birth: May 27, 1974  
Office address: Lehrstuhl für Theoretische Physik III  
Zentrum für Elektronische Korrelationen und Magnetismus  
Institut für Physik  
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### **Areas of Research**

- Electronic correlations and magnetism
- Electronic structure of correlated electron materials
- Bandstructure calculations with density functional methods
- Optical and magneto-optical spectroscopies
- Development of new numerical tools

### **Scientific Career**

1992 – 1997 Study of Physics, Charles University, Prague  
1997 Diploma Degree in Physics, Charles University, Prague  
1998 – 2002 Junior Research Fellow, Institute of Physics Academy of Sciences of the Czech Republic, Prague  
2002 Ph.D. Degree in Physics, Charles University, Prague  
2002 – 2005 Postdoctoral Research Associate, University of California, Davis  
2006 – 2007 Alexander von Humboldt Research Fellow, Center for Electronic Correlations and Magnetism, Institute for Physics, University of Augsburg  
Since 2007 Research Associate, Center for Electronic Correlations and Magnetism, Institute for Physics, University of Augsburg

### **Fellowships, awards and services to the community**

2002 Prize of Bolzano Foundation, Charles University, Prague  
2002 – 2003 NATO-NSF Research Fellowship  
2006 – 2007 Alexander von Humboldt Research Fellowship  
2008 Fellowship J. E. Purkyně of the Czech Academy of Sciences

### **Publications since 2004**

- J. Kuneš, Dm. M. Korotin, M. A. Korotin, V. I. Anisimov, and P. Werner,  
*Pressure-Driven Metal-Insulator Transition in Hematite from Dynamical Mean-Field Theory*,  
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- V. I. Anisimov, Dm. M. Korotin, M. A. Korotin, A. V. Kozhevnikov, J. Kuneš, A. O. Shorikov, S. L. Skornyakov, and S. V. Streltsov,  
*Coulomb repulsion and correlation strength in LaFeAsO from Density Functional and Dynamical Mean-Field Theories*,  
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- Jungho Kim, Young-June Kim, J. Kuneš, B. K. Cho, and E. J. Choi,  
*Optical spectroscopy and electronic band structure of ferromagnetic EuB<sub>6</sub>*,  
Phys. Rev. B **78**, 165120 (2008).
- J. Kuneš and V. I. Anisimov,  
*Temperature dependent correlations in covalent insulators: Dynamical mean-field approximation*,  
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- F. Tran, J. Kuneš, P. Novák, P. Blaha, L. D. Marks, and K. Schwarz,  
*Force calculation for orbital-dependent potentials with FP-(L)APW+lo basis set*,  
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- E. Z. Kurmaev, R. G. Wilks, A. Moewes, L. D. Finkelstein, S. N. Shamin, J. Kuneš,  
*Oxygen x-ray emission and absorption spectra as a probe of the electronic structure of strongly correlated oxides*,  
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- K.-W. Lee, J. Kuneš, R. T. Scalettar, and W. E. Pickett,  
*Correlation Effects in the Triangular Lattice Single-band System Li<sub>x</sub>NbO<sub>2</sub>*,  
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- J. Kuneš, V. I. Anisimov, S. L. Skornyakov, A. V. Lukoyanov, and D. Vollhardt,  
*NiO: Correlated Bandstructure of a Charge-Transfer Insulator*,  
Phys. Rev. Lett. **99**, 156404 (2007).
- V. I. Anisimov, A. O. Shorikov, and J. Kuneš,  
*Magnetic state and electronic structure of plutonium from “first principles” calculations*,  
J. Alloys Compd. **444-445**, 42 (2007).
- Deepa Kasinathan, K. Koepernik, J. Kuneš, H. Rosner, W. E. Pickett,  
*Origin of Strong Coupling in Lithium under Pressure*,  
Physica C **460-462**, 133 (2007).

- W. Kuch, F. Offi, L. I. Chelaru, J. Wang, K. Fukumoto, M. Kotsugi, J. Kirschner, and J. Kuneš,  
*Huge magneto-crystalline anisotropy of x-ray linear dichroism observed on Co/FeMn bilayers*,  
Phys. Rev. B **75**, 224406 (2007).
- J. Kuneš, V. I. Anisimov, A. V. Lukoyanov, and D. Vollhardt,  
*Local correlations and hole doping in NiO: A computational study*,  
Phys. Rev. B **75**, 165115 (2007).
- Deepa Kasinathan, J. Kuneš, K. Koepf, C. V. Diaconu, R. L. Martin, I. Prodan, G. E. Scuseria, N. Spaldin, L. Petit, T. C. Schulthess, and W. E. Pickett,  
*Mott Transition of MnO under Pressure: Comparison of Correlated Band Theories*,  
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- J. Kuneš and W. E. Pickett,  
*Frustration in the Coupled Rattler System  $KOs_2O_6$* ,  
Phys. Rev. B **74**, 094302 (2006).
- J. Kuneš and W. E. Pickett,  
*Effective Hamiltonian for potassium dynamics in the pyrochlore superconductor  $KOs_2O_6$* ,  
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- J. Kuneš and W. E. Pickett,  
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Physica B: Condensed Matter **378-380**, 898 (2006).
- P. Novák, J. Kuneš, L. Chaput, and W. E. Pickett,  
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phys. stat. sol. (b) **243**, 563 (2006).
- D. Kashinathan, J. Kuneš, A. Lazicky, H. Rosner, C. S. Yoo, R. T. Scalettar, and W. E. Pickett,  
*Superconductivity and Lattice Instability in Compressed Lithium from Fermi Surface Hot Spots*,  
Phys. Rev. Lett. **96**, 047004 (2006).
- J. Kuneš, W. Ku, and W. E. Pickett,  
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J. Phys. Soc. Japan **74**, 1408 (2005).
- J. Kuneš and W. E. Pickett,  
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Phys. Rev. Lett. **94**, 026403 (2005).
- J. Kuneš, T. Jeong and W. E. Pickett  
*Correlation effects and structural dynamics in the beta-pyrochlore superconductor  $KOs_2O_6$ ,*  
Phys. Rev. B **70**, 174510 (2004).
- J. Kuneš and R. Laskowski,  
*Magnetic ground state and Fermi surface of bcc Eu,*  
Phys. Rev. B **70**, 174415 (2004).
- K.-W. Lee, J. Kuneš, and W. E. Pickett,  
*Charge disproportionation and spin ordering tendencies in  $Na_xCoO_2$ ,*  
Phys. Rev. B **70**, 045104 (2004).
- J. Kuneš,  
*Magnetism and Magneto-optics in DFT,*  
Physica Scripta **T109**, 166 (2004).
- J. Kuneš, P. M. Oppeneer, S. Valencia, D. Abramsohn, H.-Ch. Mertins, W. Gudat,  
M. Hecker, C. M. Schneider,  
*Understanding the XMLD and its magnetocrystalline anisotropy at the  $L_{2,3}$ -edges of 3d transition metals,*  
J. Magn. Magn. Mater. **272-276**, 2146 (2004).
- J. Kuneš and W. E. Pickett,  
*Kondo and anti-Kondo coupling to local moments in  $EuB_6$ ,*  
Phys. Rev. B **69**, 165111(2004).