

Brief Biography

Alessandro Stroppa is a Research Director of the CNR-SPIN Institute (Italy) and deputy director of the research unit in L'Aquila (Italy). He received his PhD in Theoretical Condensed Matter Physics from University of Trieste (Italy) in 2006 and he continued his research in computational materials science at University of Vienna in the group of Prof. Georg Kresse (VASP Team). After 2009, he joined the CNR in Italy where he became permanent staff in 2012. He is contract professor at University of L'Aquila (Italy), and invited professor at Shanghai and South East University (China).

His current research areas deal with solid-state physics and material science. Specifically, he is interested in 3D and 2D hybrid inorganic-organic perovskites, non-magnetic and magnetic 2D systems with special focus on photo-ferroic, multiferroic, magnetoelectric, twistrionic, topological, magneto-optical and non-linear optical properties, skyrmions, etc. He has great experience with Density Functional Theory (DFT) methods for the study of the structural, electronic and magnetic properties using all-electrons as well as pseudopotential approaches implemented in numerical codes. He has published about 138 peer-reviewed papers (h-index=43, Total citations 6744) in theoretical condensed matter also in collaboration with experimentalists. In 2017, 5 of his papers were Highly Cited (Source: Web of Science). He is on the World's top 2% scientists lists published by Stanford University since 2019. He received honors such as the 'Best 2008 New Journal of Physics Collection'; Research Highlight talk at EUROMAT 2013; Best oral talks at Italian Physical Society conferences in 2005 and 2011; Certificate of appreciation for "his important contributions to the theoretical understanding of microscopic mechanisms of multiferroicity and magnetoelectricity in perovskite metal-organic frameworks" by Nature Conference (Nankai University, 2019). He is carrying out an intense outreach activity for middle and primary schools. [Last update Sept 04th 2023]

Selected papers

1. A. Stroppa, et al. "Electric Control of Magnetization and Interplay between Orbital Ordering and Ferroelectricity in a Multiferroic Metal-Organic Framework", *Angew. Chem. Int. Ed. Engl.*, 2011, 50, 5847-5850. Times cited:192.
2. A. Stroppa, et al. "Hybrid Improper Ferroelectricity in a Multiferroic and Magnetolectric Metal-Organic Framework", *Adv. Mat.*, 2013, 25, 2284-2290. Times cited:215.
3. A. Stroppa, et al. "Tuning the Ferroelectric Polarization in a Multiferroic Metal-Organic Framework", *J. Am. Chem. Soc.* 2013, 135, 18126-18130. Times cited:190.
4. A. Stroppa, et al. "Electric-Magneto-Optical Kerr Effect in a Hybrid Organic-Inorganic Perovskite", *J. Am. Chem. Soc.* 2017, 139, 12883-12886. Times cited:23.
5. A. Stroppa, et al. "Tunable ferroelectric polarization and its interplay with spin-orbit coupling in tin iodide perovskites", *Nat. Commun.*, 2014, 5, 5900. Times cited:175 (Highly Cited Paper)
6. A. Stroppa, "Cross coupling between electric and magnetic orders in a multiferroic metal-organic framework", *Sci. Rep.*, 2014, 4, 6062. Times cited:134.
7. A. Stroppa, et al. "Magneto-Optical Kerr Switching Properties of $(CrI_3)_2$ and $(CrBr_3/CrI_3)$ Bilayers", *ACS Appl. Electron. Mater.* 2020, 2, 5, 1380-1373. Times cited:1.
8. A. Stroppa et al. "Activating magnetoelectric optical properties by twisting antiferromagnetic bilayers", *Phys. Rev. B*, 106, 184408 (2022). Times cited: 0

Selected links (Outreach)

- <https://outreach.cnr.it/risorsa/231/giocando-con-la-geometria>
- <https://www.spin.cnr.it/outreach-and-t-t/events/item/95-la-realta-oltre-lo-specchio-divertirsi-con-le-simmetrie>
- <https://outreach.cnr.it/risorsa/79/dalla-geometria-alla-geo-materia-un-affascinante-percorso-didattico>