Claudio Pica
Department of Mathematics and Computer Science
Computational Science
Email: pica@cp3.sdu.dk
Phone: +4565502519

Curriculum

Claudio Pica, Ph.D.
Languages: Italian (native), English (fluent), French (scholastic), Danish (basic)

Employment

2017/1 - Present **CEO DeiC National HPC center**, SDU
2013/1 - Present **Head of Center**, SDU eScience center
2010/02 - Present **Professor**, CP3-Origins & IMADA, SDU, DK
2013/11 - Present **Member of the national DeIC eScience committee**
2014/10 - 2016/10 **Member of the national board of the Danish Physical Society**
2012/03 - 2013/02 **Board member of the Nordic WLCG (NLCG) Steering Committee**, appointed by DASTI (Danish Agency for Science, Technology and Innovation)
2008/10 - 2010/02 **PostDoctoral R.A.**, University of Edinburgh, UK
2006/11 - 2008/10 **Research Associate**, Brookhaven National Lab, NY, USA
2005/03 - 2006/11 **INFN Research Fellow**, INFN, Pisa, ITALY

Academic Degrees

2002/01 - 2005/12 **Ph.D. in Physics**, University of Pisa, ITALY
1996/09 - 2001/07 **Laurea in Theoretical Physics 110/100 cum Laude,** University of Pisa, ITALY
1996/09 - 2001/12 **Diploma (M.Sc. equiv) in Physics 70/70 cum Laude**, Scuola Normal Superiore, Pisa, ITALY (Earned and maintained a 4-year merit-based scholarship in the most prestigious institution of higher learning in Italy.)

Publication Summary

98 publications in international peer reviewed journals (43) and proceedings of international conferences (55). 10 TopCite 100+, 6 TopCite 50+ papers, over 2800 citations, h-index 29 according to Google Scholar. ~30 invited plenary talks/seminars at international meetings, physics schools and academic institutions. Reviewer for Physical Review D, European Physical Journal C, Physics Letters B and Physical Review Letters. Referee for the European PRACE organization, for access to the largest HPC facilities in Europe.

Grants

2018-2022 Danish PI for the European ITN ETN “EuroPLEx: European network for Particle physics, Lattice field theory and Extreme computing”. **Grant: 4.000.000 eur**
2013-2018 Lundbeckfonden fellow2012.**Grant:10.000.000DKK(~1.340.000eur)**
2016-2021 Outreachproject“Kvantebanditter”fundedbythe“A.P.MøllerogHustruChastineMc-KinneyMøllers”Foundation **Grant: 4.000.000DKK(~537.000eur)**
2016-2018 PIofthe nationale-infrastructureproject“National Science AppStore”funded DeIC(Danishe-Infratructure Cooperation)andDEFF(Denmark’selectronicresearchlibrary).**Grant:1.400.000DKK(~190.000eur)**
2016-2021 PIoftheoutreachproject“QuantumRascals”fundedbythe“A.P.MøllerogHustruChastineMc-KinneyMøllers” Foundation. **Grant:4.000.000DKK(~536.000 eur)**
2015-2016 PIoftheoutreachproject“SDUSupercomputingChallenge”2016 and 2017 fundedbythe“A.P.MøllerogHustru ChastineMc-Kinney Møllers” Foundation, Industriens Fond, Knud Højgaards Fond, Tuborg Fondet and the Otto Bruuns Fond.**Grant:3.725.000DKK(~500.000eur)**
2010-2015 PIofseveralEuropeanPRACEgrantsforHPC. Totalof Grants:**36.8Mcore*hour (value ~500.000eur)**
2013 Co-applicantfortherenewaloftheDGCentreofExcellence“CP3-Origins”(directorProf.F.Sannino).**Grant: 40.000.000DKK (~5.300.000eur)**
2013 PI for a DeIC grant for HPC hardware. **Grant: 417.500 DKK (~56.000 eur)**

Selected Outreach

KvanteBanditter, 2016-2021. Four years outreach project. Among other initiative, I co-designed the website which won the gold “Lovie Awards 2018” in the category “Schools & Education” as best European website.

SDU SuperComputing Challenge 2017. January-December 2017, second edition.

“Supercomputers”, visit of the “akademiet for talentfulde unge” at SDU, 2016

“Supercomputing & eScience at SDU”, Inspire - Educate - Innovate! program at SDU, 2016

SDU SuperComputing Challenge 2016, August 2015-August 2016. Year-long event to challenge young students to solve real-world computational problems from private companies. The event was featured by local newspapers and television.

Natural Science Distiguished Lecture at the Faculty of Science SDU, April 2013.

Interviewed for the national newspaper “Berlingske” (Science section) (http://www.b.dk/viden/fysikernes-supercomputere-bliver-vildere-og-vildere)

One of the 2 main speakers of the public lecture series “High School Tour: Angels & Demons” (see http://cp3-origins.dk/about-cp3/outreach) for promoting high energy physics in high schools (March and April 2010)

Speaker at the “Art & Science 01” exhibition organized by the SDU Centre for Art and Science, and featured on the local TV2-Fyn (see http://cp3-origins.dk/a/4686).

Organization of International Conferences and Workshops

Conference series “Origin of Mass” 2010, 2011, 2013, 2015 and 2016 at SDU and in 2012 in Stockholm.

The 3rd, 4th 6th and 7th “Odense Winter School” series on Geometry and Theoretical Physics. Odense 2010-2014.

“European Twisted Mass Collaboration Meeting & Mini-workshop”, Odense 2014.

“Discovering Technicolor” workshop with the ATLAS and CMS collaboration. Odense 2010.

The “Mass 2011 LHC Training School” graduate school sponsored by NordForsk

Employment

Department of Mathematics and Computer Science

Odense M
1. Jan 2024 → present

Head of Section, Professor

Computational Science

1. Jan 2024 → present

Research outputs

Afrapportering vedrørende den Nationale Strategi for Data Management baseret pa FAIR Principper (2022)

Hansen Renner, J., Holmstrand, F. K., Rasmussen, M., de Lichtenberg, U. N., Buss, M., Schlicting, T., Larsen, S. K., Hansen, G. J., Pies-Heje, J., Quinones, R., Kaspersen, S. B., Jensen, H., Kruuse, K. K., Vendelboe, K. K., Begtrup, W. J., Burmeister, B. N., Belsø, R., Dalum, M. P., Pica, C. & Bøgsted, M. & 39 others, Sommer, M. M. L., Araghi, A., Sønderholm, M., Svendsen, M., Raahauge, A., Reif, L. C., Conrad, S. A., Larsen, V. A., Arleth, L., Christensen-Dalsgaard, B., Drongstrup, D., Larsen, B., Lindberg, B., Andreasen, M., Lund, H., Vlachos, E., Schwarz, A. S., Hansen, D. C., Huser, F., Hansen, K. K., Mihai, H., Plough, N., Ask, B., Frank, A., Andreasen, C., Smedegaard, J., Toftgaard, T. K., Friis, T. L., Peter, D. F. S., Nielsen, S., Arildsen, T., Beckers, D. B. S., Nielsen, B. J., Larsen, T., Kirk, O., Lindberg, B., Andreasen, M., Oddershede, L. & Falktoft, A., Jan 2023, DeiC. 28 p.

Scattering of Goldstone bosons and resonance production in a composite Higgs model on the lattice

Drach, V., Janowski, T., Pica, C. & Prelovsek, S., Apr 2021, In: Journal of High Energy Physics. 2021, 4, 17 p., 117.

Fundamental composite dynamics: A review
Cacciapaglia, G., Pica, C. & Sannino, F., 20. Sept 2020, In: Physics Reports. 877, p. 1-70

Quantum Kate - a model for physics outreach
Jäger, B., Gregersen, S., Pica, C. & Sannino, F., 29. May 2019, In: P o S - Proceedings of Science. 334, 5 p., 327.

S U (2) with fundamental fermions and scalars
Hansen, M., Janowski, T., Pica, C. & Toniato, A., 26. Mar 2018, In: EPJ Web of Conferences. 175, 8 p., 08010.

SU(3) sextet model with Wilson fermions
Hansen, M. & Pica, C., 26. Mar 2018, In: EPJ Web of Conferences. 175, 8 p., 08018.

Update on SU(2) gauge theory with N_F = 2 fundamental flavours
Drach, V., Janowski, T. & Pica, C., 26. Mar 2018, In: EPJ Web of Conferences. 175, 8 p., 08020.

Tuning the hybrid Monte Carlo algorithm using molecular dynamics forces' variances
Bussone, A., Della Morte, M., Drach, V. & Pica, C., Jan 2018, In: Computer Physics Communications. 234, januar, p. 179-187

On reweighting for twisted boundary conditions
Bussone, A., Della Morte, M., Hansen, M. R. L. & Pica, C., Oct 2017, In: Computer Physics Communications. 219, p. 91-98

Beyond the Standard Model: Charting Fundamental Interactions via Lattice Simulations
Pica, C., 2017, *Proceedings of the 34th Annual International Symposium on Lattice Field Theory*. Proceedings of Science, 20 p. 015. (P o S - Proceedings of Science).

Composite Higgs Dynamics on the Lattice
Pica, C., Drach, V., Hansen, M. R. L. & Sannino, F., 2017, In: EPJ Web of Conferences. 137, 10005.

Conformal Phase Diagram of Complete Asymptotically Free Theories
Pica, C., Ryttov, T. A. & Sannino, F., 2017, In: Physical Review D. 96, 7, 14 p., 074015.

Ideal walking dynamics via a gauged NJL model
Rantaharju, J., Pica, C. & Sannino, F., 2017, In: Physical Review D. 96, 1, 9 p., 014512.

Nambu-Jona-Lasinio model with Wilson fermions
Rantaharju, J., Drach, V., Pica, C. & Sannino, F., 2017, In: Physical Review D. 95, 1, 014508.

Sextet Model with Wilson Fermions
Hansen, M. & Pica, C., 2017, *Proceedings of the 34th Annual International Symposium on Lattice Field Theory*. Proceedings of Science, 7 p. (P o S - Proceedings of Science).

SU(3) sextet model with Wilson fermions
Hansen, M., Drach, V. & Pica, C., 2017, In: Physical Review D. 96, 3, 19 p., 034518.

SU(2) gauge theory with two fundamental flavors: a Minimal Template for Model Building
Arthur, R., Drach, V., Hansen, M., Hietanen, A., Pica, C. & Sannino, F., 29. Nov 2016, In: Physical Review D. 94, 9, p. 1-17 094507.

BSMBench: A flexible and scalable HPC benchmark from beyond the standard model physics
Bennett, E., Lucini, B., Del Debbio, L., Jordan, K., Patella, A. & Pica, C., 13. Sept 2016, *Proceedings of the 14th International Conference on High Performance Computing & Simulation*. Zeljkovic, V. & Smari, W. W. (eds.). IEEE, p. 834-839

Adjoint SU(2) with four fermion interactions
Rantaharju, J., Drach, V., Pica, C. & Sannino, F., 2016, In: Proceedings of Science. Part F128557, 7 p., 231.

Anomalous Dimensions of Conformal Baryons
Pica, C. & Sannino, F., 2016, In: Physical Review D. 94, 7, p. 1-5 071702.

A simple method to optimize HMC performance
Bussone, A., Della Morte, M., Drach, V., Hansen, M. R. L., Hietanen, A., Rantaharju, J. M. O. & Pica, C., 2016, *Proceedings of the 34th Annual International Symposium on Lattice Field Theory.* Vol. Part F128557. 7 p. 260. (P o S - Proceedings of Science).

Large volumes and spectroscopy of walking theories
Del Debbio, L., Lucini, B., Patella, A., Pica, C. & Rago, A., 2016, In: Physical Review D. 93, 5, 13 p., 054505.

The scalar sector of SU(2) gauge theory with N_F = 2 fundamental flavours
Drach, V., Janowski, T., Pica, C., Rantaharju, J. & Sannino, F., 2016, In: Proceedings of Science. Part F128557, 7 p.

Template Composite Dark Matter: *SU(2)* gauge theory with 2 fundamental flavours
Drach, V., Hietanen, A., Pica, C., Rantaharju, J. & Sannino, F., 13. Nov 2015, In: P o S - Proceedings of Science. 7 p.

Wilson Fermions with Four Fermion Interactions
Rantaharju, J., Drach, V., Hietanen, A., Pica, C. & Sannino, F., 12. Nov 2015, In: P o S - Proceedings of Science. 251, 7 p.

Conformal symmetry vs. chiral symmetry breaking in the SU(3) sextet model
Drach, V., Hansen, M., Hietanen, A., Pica, C. & Sannino, F., 18. Aug 2015, In: P o S - Proceedings of Science. 7 p.

Reweighting twisted boundary conditions
Bussone, A., Della Morte, M., Hansen, M. R. L. & Pica, C., 2015, *Proceedings, 33rd International Symposium on Lattice Field Theory (Lattice 2015) : Kobe, Japan, July 14-18, 2015.* 7 p. (P o S - Proceedings of Science).

Composite (Goldstone) Higgs Dynamics on the Lattice: Spectrum of SU(2) Gauge Theory with two Fundamental Fermions
Arthur, R., Drach, V., Hansen, M. R. L., Hietanen, A., Lewis, R., Pica, C. & Sannino, F., 23. Dec 2014, In: P o S - Proceedings of Science. 214, 6 p., 249.

Composite Goldstone Dark Matter: Experimental Predictions from the Lattice
Hietanen, A., Lewis, R., Pica, C. & Sannino, F., 18. Dec 2014, In: Journal of High Energy Physics. 2014, 12, 130.

Scattering lengths in SU(2) gauge theory with two fundamental fermions
Arthur, R., Drach, V., Hansen, M. R. L., Hietanen, A., Pica, C. & Sannino, F., 15. Dec 2014, In: P o S - Proceedings of Science.

Fundamental Composite Higgs Dynamics on the Lattice: SU(2) with Two Flavors
Hietanen, A., Lewis, R., Pica, C. & Sannino, F., 23. Jul 2014, In: Journal of High Energy Physics. 2014, 7, 116.

Large-volume results in SU(2) with adjoint fermions
Del Debbio, L., Lucini, B., Pica, C., Patella, A., Rago, A. & Roman, S., 21. Nov 2013, In: P o S - Proceedings of Science. 9 p., 067.

Predictions for LHC from SO(4) MWT
Hietanen, A., Pica, C., Sannino, F. & Søndergaard, U., 15. Nov 2013, In: PoSLAT.

Orthogonal Technicolor with Isotriplet Dark Matter on the Lattice
Hietanen, A., Pica, C., Sannino, F. & Ishøj Søndergaard, U., 13. Feb 2013, In: Physical Review D. 87, 3, 9 p., 034508.

Magnetic Fixed Points and Emergent Supersymmetry
Antipin, O., Mojaza, M., Pica, C. & Sannino, F., 2013, In: Journal of High Energy Physics. 2013, 28 p., 37.

Isotriplet Dark Matter on the Lattice
Hietanen, A., Pica, C., Sannino, F. & Ishøj Søndergaard, U., 1. Nov 2012.

Exceptional and Spinorial Conformal Windows
Mojaza, M., Pica, C., Ryttov, T. & Sannino, F., 2012, In: Physical Review D. 86, 7, p. 076012 14 p.

Isotriplet Dark Matter on the Lattice: SO(4)-gauge theory with two Vector Wilson fermions
Hietanen, A., Pica, C., Sannino, F. & Sondergaard, U., 2012, In: Proceedings of Science. Part F130497, 058.

Light Asymmetric Dark Matter on the Lattice: SU(2) Technicolor with Two Fundamental Flavors
Lewis, R., Pica, C. & Sannino, F., 2012, In: Physical Review D. 85, p. 014504

Finite volume effects in SU(2) with two adjoint fermions
Del Debbio, L., Lucini, B., Patella, A., Pica, C. & Rago, A., 20. Nov 2011, In: P o S - Proceedings of Science. 2011, 84

Improved Lattice Spectroscopy of Minimal Walking Technicolor
Bursa, F., Del Debbio, L., Henty, D., Kerrane, E., Lucini, B., Patella, A., Pica, C., Pickup, T. & Rago, A., 21. Apr 2011, In: Physical Review D. 84, 034506.

Beta Function and Anomalous Dimensions
Pica, C. & Sannino, F., 2011, In: Physical Review D. 83, 11, 7 p.

Discovering Technicolor
R. Andersen, J., Antipin, O., Azuelos, G., Del Debbio, L., Del Nobile, E., Di Chiara, S., Hapola, T., Jarvinen, M., J. Lowdon, P., Maravin, Y., Masina, I., Nardecchia, M., Pica, C. & Sannino, F., 2011, In: The European Physical Journal Plus. 126, 9, p. 81

Dual of QCD with One Adjoint Fermion
Mojaza, M., Nardecchia, M., Pica, C. & Sannino, F., 2011, In: Physical Review D. 83, 6, p. 065022 9 p.

Flavor Dependence of the S-parameter.
Di Chiara, S., Pica, C. & Sannino, F., 2011, In: Physics Letters B. 700, 3-4, p. 229-235

S-parameter at Non-Zero Temperature and Chemical Potential
Søndergaard, U. I., Sannino, F. & Pica, C., 2011, In: Physical Review D. 84, 7, p. 075022 9 p.

UV and IR Zeros of Gauge Theories at The Four Loop Order and Beyond
Pica, C. & Sannino, F., 2011, In: Physical Review D. 83, 3, 035013 .

Confining vs. conformal scenario for SU(2) with 2 adjoint fermions. Gluonic observables.
Del Debbio, L., Lucini, B., Patella, A., Pica, C. & Rago, A., 3. Nov 2010, In: PoSLAT. 2010

Confining vs. conformal scenario for SU(2) with 2 adjoint fermions. Mesonic spectrum.
Pica, C., Del Debbio, L., Lucini, B., Patella, A. & Rago, A., 3. Nov 2010, In: PoSLAT. 2010

Improved Spectroscopy of Minimal Walking Technicolor
Kerrane, E., Del Debbio, L., Pica, C., Rago, A., Patella, A., Lucini, B., Bursa, F., Pickup, T. & Henty, D., 2. Nov 2010, In: PoSLAT. 7 p.

Mass anomalous dimension and running of the coupling in SU(2) with six fundamental fermions
Bursa, F., Del Debbio, L., Keegan, L., Pica, C. & Pickup, T., 5. Oct 2010, In: PoS LATTICE.

Mass anomalous dimension in SU(2) with six fundamental fermions
Bursa, F., Del Debbio, L., Keegan, L., Pica, C. & Pickup, T., 19. Jul 2010, In: Physics Letters B. 696, 4, p. 374-379

Hot Conformal Gauge Theories
Mojaza, M., Pica, C. & Sannino, F., 2010, In: Physical Review D. 82, 11, p. 116009 9 p.

Infrared dynamics of Minimal Walking Technicolor
Del Debbio, L., Lucini, B., Patella, A., Pica, C. & Rago, A., 2010, In: Physical Review D. 82, p. 014510 24 p.

Mesonic spectroscopy of Minimal Walking Technicolor
Del Debbio, L., Lucini, B., Patella, A., Pica, C. & Rago, A., 2010, In: Physical Review D. 82, 1, p. 014509 15 p.

Running of the coupling and quark mass in SU(2) with two adjoint fermions
Bursa, F., Del Debbio, L., Keegan, L., Pica, C. & Pickup, T., 14. Oct 2009, In: PoS LAT.

Technicolor on the Lattice
Pica, C., Del Debbio, L., Lucini, B., Patella, A. & Rago, A., 17. Sept 2009.

Conformal vs confining scenario in SU(2) with adjoint fermions
Del Debbio, L., Lucini, B., Patella, A., Pica, C. & Rago, A., 22. Jul 2009, In: Physical Review D.

A test of first order scaling in Nf =2 QCD: a progress report
Bonati, C., Cossu, G., D'Elia, M., Di Giacomo, A. & Pica, C., 21. Jan 2009, In: PoS LATTICE.

Mass anomalous dimension in SU(2) with two adjoint fermions
Bursa, F., Del Debbio, L., Keegan, L., Pica, C. & Pickup, T., 2009, In: Physical Review D. 81, 1, p. 014505 13 p.

Fermions in higher representations. Some results about SU(2) with adjoint fermions
Del Debbio, L., Patella, A. & Pica, C., 2. Dec 2008, In: PoS LATTICE.

Orientifold Planar Equivalence: The Chiral Condensate
Armoni, A., Lucini, B., Patella, A. & Pica, C., 29. Sept 2008, In: PoS LATTICE.

Renormalized Polyakov loops in various representations in finite temperature SU(2) gauge theory
Huebner, K. & Pica, C., 23. Sept 2008, In: PoS LATTICE.

Correlation functions of the energy-momentum tensor in SU(2) gauge theory at finite temperature
Huebner, K., Karsch, F. & Pica, C., 7. Aug 2008, In: Physical Review D. 78, 9, p. 094501 11 p.

Higher representations on the lattice: numerical simulations. SU(2) with adjoint fermions
Del Debbio, L., Patella, A. & Pica, C., 14. May 2008, In: Physical Review D. 81, p. 094503 16 p.

Lattice Study of Planar Equivalence: The Quark Condensate
Armoni, A., Lucini, B., Patella, A. & Pica, C., 28. Apr 2008, In: Physical Review D. 78, 4, p. 045019 12 p.

Monopole condensation in two-flavour Adjoint QCD
Cossu, G., D'Elia, M., Di Giacomo, A., Lacagnina, G. & Pica, C., 13. Feb 2008, In: Physical Review D.

Quenched mesonic spectrum at large N
Del Debbio, L., Lucini, B., Patella, A. & Pica, C., 18. Dec 2007, In: Journal of High Energy Physics. 2008, 3

An update in monopole condensation in two-flavour Adjoint QCD
Lacagnina, G., Cossu, G., D'Elia, M., Di Giacomo, A. & Pica, C., 9. Oct 2007, In: PoSLAT.

Confinement: G_2 group case
Cossu, G., D'Elia, M., Di Giacomo, A., Lucini, B. & Pica, C., 2. Oct 2007, In: PoSLAT.

Baryon currents in the C-broken phase of QCD
Lucini, B., Patella, A. & Pica, C., 1. Oct 2007, In: PoSLAT.

A test of first order scaling in Nf=2 QCD
Cossu, G., D'Elia, M., Di Giacomo, A. & Pica, C., 30. Sept 2007, In: PoSLAT.

Spontaneous breaking of discrete symmetries in QCD on a small volume
Lucini, B., Patella, A. & Pica, C., 6. Sept 2007, In: AIP Conference Proceedings.

G_2 gauge theory at finite temperature
Cossu, G., D'Elia, M., Di Giacomo, A., Lucini, B. & Pica, C., 5. Sept 2007, In: Journal of High Energy Physics. 2007, 10

Two flavor QCD and confinement - II
Cossu, G., D'Elia, M., Di Giacomo, A. & Pica, C., 1. Jul 2007.

Baryon currents in QCD with compact dimensions
Lucini, B., Patella, A. & Pica, C., 2007, In: Physical Review D. 75, 12, p. 121701 4 p.

Dual Superconductivity in G2 group
Cossu, G., D'Elia, M., Di Giacomo, A., Lucini, B. & Pica, C., 28. Sept 2006, In: PoSLAT.

Monopole condensation in two-flavour Adjoint QCD
Cossu, G., D'Elia, M., Di Giacomo, A., Lacagnina, G. & Pica, C., 26. Sept 2006, In: PoSLAT.

Analysis of systematic errors in the calculation of renormalization constants of the topological susceptibility on the lattice
Alles, B., D'Elia, M., Di Giacomo, A. & Pica, C., 10. Apr 2006, In: Physical Review D.

Chiral transition and deconfinement in QCD
D'Elia, M., Di Giacomo, A. & Pica, C., 28. Nov 2005, In: Nucl.Phys.Proc.Suppl..

Order, Disorder and Confinement
D'Elia, M., Di Giacomo, A. & Pica, C., 7. Nov 2005, In: AIP Conference Proceedings.

The chiral transition in two-flavor QCD
D'Elia, M., Di Giacomo, A. & Pica, C., 3. Oct 2005, In: PoS LAT.

Study of the systematic errors in the calculation of renormalization constants of the topological susceptibility on the lattice
Alles, B., D'Elia, M., Di Giacomo, A. & Pica, C., 9. Sept 2005, In: PoSLAT.

Two flavor QCD and Confinement
D'Elia, M., Di Giacomo, A. & Pica, C., 22. Mar 2005, In: Physical Review D. 72, 11, p. 114510 27 p.

Color confinement and dual superconductivity of the vacuum. IV
D'Elia, M., Di Giacomo, A., Lucini, B., Paffuti, G. & Pica, C., 2005, In: Physical Review D. 71, 11, p. 114502 7 p.

On the order of the deconfining transition in N_f=2 QCD
D'Elia, M., Di Giacomo, A. & Pica, C., 9. Aug 2004, In: International Journal of Modern Physics A. 20

Chiral transition and deconfinement in N_f = 2 QCD
D'Elia, M., Di Giacomo, A., Lucini, B., Paffuti, G. & Pica, C., 6. Aug 2004, In: Nucl.Phys.Proc.Suppl..

The order of the chiral transition in N_f=2 QCD
D'Elia, M., Di Giacomo, A. & Pica, C., 6. Aug 2004, In: Nuclear Physics B - Proceedings Supplements.

Topological susceptibility for the SU(3) Yang–Mills theory
Del Debbio, L., Giusti, L. & Pica, C., 2004, In: Nuclear Physics B - Proceedings Supplements. 140

Topological susceptibility in the SU(3) gauge theory
Del Debbio, L., Giusti, L. & Pica, C., 2004, In: Physical Review Letters. 94, 3, p. 032003 4 p.

Deconfining transition in two-flavor QCD
M. Carmona, J., D'Elia, M., Del Debbio, L., Di Giacomo, A., Lucini, B., Paffuti, G. & Pica, C., 10. Sept 2003, In: Nuclear Physics B - Proceedings Supplements. 129

Topological susceptibility from the overlap
Del Debbio, L. & Pica, C., 2003, In: Journal of High Energy Physics. 2004, 2

Color confinement and dual superconductivity in unquenched QCD
M. Carmona, J., D'Elia, M., Del Debbio, L., Di Giacomo, A., Lucini, B., Paffuti, G. & Pica, C., 6. Sept 2002, In: Nuclear Physics A.

Deconfining transition in Full QCD
M. Carmona, J., D'Elia, M., Del Debbio, L., Di Giacomo, A., Lucini, B., Paffuti, G. & Pica, C., 6. Sept 2002, In: Nucl.Phys.Proc.Suppl..

Activities

N.K.Nielsen Fest
Pica, C. (Organizer)
5. Nov 2011

Sciencedagen 2011
Pica, C. (Lecturer)
10. Oct 2011

Physical Review D (Journal)
Pica, C. (Peer reviewer)
12. Aug 2011

Physical Review D (Journal)
Pica, C. (Peer reviewer)
2. Aug 2011

Physical Review D (Journal)
Pica, C. (Peer reviewer)
2. Jun 2011

Mass 2011 LHC Training School
Pica, C. (Organizer)
9. May 2011 → 13. May 2011

Origin of Mass 2011
Pica, C. (Organizer)
9. May 2011 → 13. May 2011

Art & Science 01
Pica, C. (Speaker)
30. Mar 2011

't Hooft Nobel Lecture: Black Holes in Elementary Physics
Pica, C. (Other)
2. Nov 2010

3rd Odense Winter School on Geometry and Theoretical Physics
Pica, C. (Organizer)
1. Nov 2010 → 5. Nov 2010

3rd Odense Winter School on Geometry and Theoretical Physics
Pica, C. (Speaker)
1. Nov 2010

Discovering Technicolor
Pica, C. (Organizer)
25. Oct 2010 → 27. Oct 2010

Follow Up Meeting with the Danish National Research Foundation
Pica, C. (Speaker)
14. Oct 2010

CP³-Origins Welcomes the First Year Students
Pica, C. (Organizer)
15. Sept 2010

STRONGBSM Kickoff Meeting
Pica, C. (Speaker)
19. Aug 2010

STRONGBSM Kickoff Meeting
Pica, C. (Organizer)
16. Aug 2010 → 19. Aug 2010

Lattice 2010
Pica, C. (Speaker)
14. Jun 2010 → 19. Jun 2010

Origin of Mass 2010
Pica, C. (Organizer)
3. May 2010 → 7. May 2010

High School Tour: Angels and Demons
Pica, C. (Speaker)
Mar 2010 → May 2010

Press/Media

Danske universiteter klar med fire nye supercomputer-centre
Pica, C.
12/11/2020
1 Media contribution

Danske universiteter med til at bygge Europas største supercomputer
Pica, C.
13/07/2019
1 Media contribution

Dansk supercomputer bliver tilgængelig for flere
Pica, C.
12/11/2020
1 Media contribution

Dansk supercomputer skal booste samfundsværdien
Pica, C.
11/11/2020
1 Media contribution

Forskere får adgang til ny dansk supercomputer
Pica, C.
23/11/2020
1 Media contribution

Kvante Karina hædret i London
Pica, C.
15/11/2019
1 Media contribution

Lettere adgang til supercomputere kan give mere bæredygtigt byggeri
Pica, C.
17/03/2023
1 Media contribution

Lettere adgang til supercomputere rummer store perspektiver for dansk forskningsmiljø
Pica, C.
16/03/2023
1 Media contribution

Ny dansk supercomputer
Pica, C.
26/01/2021
1 Media contribution

Ny dansk supercomputer skaber langt mere samfundsværdi
Pica, C.
11/11/2020
1 Media contribution

Ny dansk supercomputer skaber langt mere samfundsværdi
Pica, C.
11/11/2020
1 Media contribution

Ny dansk supercomputer skaber langt mere samfundsværdi
Pica, C.
11/11/2020
1 Media contribution

Ny dansk supercomputer skaber langt mere samfundsværdi
Pica, C.
11/11/2020
1 Media contribution

Ny dansk supercomputer skaber mere samfundsværdi
Pica, C.
11/11/2020
1 Media contribution

Ny national portal giver danske forskere lettere adgang til supercomputere
Pica, C.
14/03/2023
1 Media contribution

Ny national portal giver danske forskere lettere adgang til supercomputere
Pica, C.
15/03/2023
1 Media contribution

Ny national portal giver danske forskere lettere adgang til supercomputere
Pica, C.
15/03/2023
1 Media contribution

Ny national portal giver danske forskere lettere adgang til supercomputere
Pica, C.
17/03/2023
1 Media contribution

PRM / Ny dansk supercomputer skaber langt mere samfundsværdi
Pica, C.
11/11/2020
1 Media contribution

PRM / Ny dansk supercomputer skaber langt mere samfundsværdi
Pica, C.
11/11/2020
1 Media contribution

PRM / Ny national portal giver danske forskere lettere adgang til supercomputere
Pica, C.
15/03/2023
1 Media contribution

PRM / Ny national portal giver danske forskere lettere adgang til supercomputere
Pica, C.
15/03/2023
1 Media contribution

SDU eScience Center bliver en del af HALRIC konsortiet
Pica, C.
13/04/2023
1 Media contribution

Seks gange dansk guld ved web-EM
Pica, C.
12/10/2018
1 Media contribution

Supercomputer på SDU laver 750.000 milliarder beregninger per sekund
Pica, C.
10/11/2018
1 Media contribution

TV 2 Nyhederne 19.00
Pica, C.
15/11/2019
1 Media contribution

Universitetssamarbejde om supercomputer
Pica, C.
11/11/2020
1 Media contribution

Projects

A.P. Møller og Hustru Chastine Mc-Kinney Møllers Fond - Logimondo
Pica, C. (Head coordinator)
06/03/2015 → 31/12/2017

Eu - Horizon 2020 - Excellent Science - EOSC-Nordic
Pica, C. (Head coordinator)
01/09/2019 → 31/08/2022

EU – Horizon 2020 - Excellent Science - MSCA Marie Skodowska-Curie Actions - European network for Particle physics, Lattice field theory and Extreme computing (EuroPLEx)
Pica, C. (Head coordinator)
01/01/2019 → 31/12/2022

EU - Horizon Europe - Smart Energy Digital Innovation Hub (SEDIH)
Pica, C. (Project participant)
01/08/2023 → 31/07/2026

EU - Interreg - HALRIC - Hanseatic Life Science Research Infrastructure Consortium for triple-helix innovation
Pica, C. (Project participant)
01/04/2023 → 30/03/2026

H2020 - EU HPC - EuroCC@DK
Pica, C. (Project participant)
01/09/2020 → 31/08/2022

Lundbeckfonden - Fellowships - Lundbeck Foundation Junior Group Leader Fellowship - New Fundamental Force of Nature
Pica, C. (Head coordinator)
01/04/2013 → 31/03/2018

Otto Bruuns Fond - SDU Supercomputer Challenge 2017
Pica, C. (Head coordinator)
01/01/2017 → 31/12/2017

Region Syddanmark - Odense Universitetshospital - National Science App Store - 2
Pica, C. (Head coordinator)
01/04/2017 → 31/12/2018

SDU Supercomputer Challenge 2017
Pica, C. (Head coordinator)
01/01/2017 → 31/12/2017

Uddannelses- og Forskningsministeriet – Datainfrastruktur og –services / Data Management by design
Pica, C. (Head coordinator)
01/02/2018 → 31/12/2018

Uddannelses- og Forskningsministeriet - DeIC - National Science App Store
Pica, C. (Head coordinator)
01/08/2016 → 30/06/2018

Uddannelses- og Forskningsministeriet - DeIC - Open science - konkretisering af FAIR
Pica, C. (Head coordinator)
01/09/2018 → 28/02/2019

Uddannelses og Forskningsministeriet - EUopSTART - Seagrass Based Solutions for Global Challenges
Holmer, M. (Project participant), Glud, R. N. (Project participant) & Pica, C. (Project participant)
20/02/2019 → 15/01/2020

Uddannelses- og Forskningsministeriet – Forskningsinfrastruktur - CERN-UP - Samarbejdsaftale om forskningsinfrastruktur
Pica, C. (Head coordinator)
01/01/2019 → 31/12/2021

Uddannelses- og Forskningsministeriet - National HPC Type 1
Pica, C. (Project participant)
01/01/2020 → 31/12/2022

Uddannelses- og Forskningsministeriet- National HPC Type 3
Pica, C. (Project participant)
01/11/2020 → 31/12/2022

Uddannelses- og Forskningsministeriet - Projekt 5
Pica, C. (Project participant)
01/11/2020 → 31/12/2022

Uncovering the nature of the Higgs boson
Pica, C. (Head coordinator)
01/01/2014 → 31/12/2016

Teaching Portfolio

Formal education training

I have successfully completed the 2011 “Lecturer Training Program” at SDU.
As part of the training program, I took part in two separate training workshops and underwent about 25 hours of supervision by expert colleagues (both with an internal and one external supervisor) as well as about 15 hours of peer supervision by younger colleagues also attending the training program. Finally the SDU training program requires to carry out a “Pedagogical Development Project” to be completed with the students of one of the classes I was teaching at the time. The project of my choice was “Activating students of abstract disciplines.”
In addition, I took part of the following training and high education courses:
• “PhD supervisor training course”
• “Design Collaborative E-learning Activities for your students”
• “Linking discipline-based research and teaching to benefit student learning”
• “Developing research based teaching”
• “Workshop om prøveformer” (Workshop on testforms)
• “Workshop on digital exams”

Administrative tasks relating to education

As part of the IMADA management group, I take part in discussion related to the organization of the study programs in the department.
I have been responsible for the planning and organization of several courses in the math, applied math, math for economics and physics curricula at SDU (the full list is below), including the first year calculus course for students of mathematics, math-economy and physics. In the past six years, I have organized several PhD/graduate schools:
• the 3rd, 4th 6th and 7th “Odense Winter School” series on Geometry and Theoretical Physics, Odense 2010-2014. The 3rd edition of the school featured Nobel price laureate G. ‘t Hooft.
• the “Mass 2011 LHC Training School” graduate school sponsored by NordForsk.
When I arrived at CP3-Origins in 2010, together with Prof. F. Sannino to design and set up a successful honor program called “CP3 Genius Program” for talented students in math and physics. During the outreach activity “SDU Supercomputing Challenge”, we organized in 2016-2018 a few programming courses (e.g. “programming in Python”, “parallel programming in Python”) for the students taking part in the event.

Experience of study programmes, supervision and examinations

While eployed at the Department of Mathematics and Computer Science (IMADA) at SDU, since 2010, I have been glad to teach all the courses offered to me in four different curricula: pure math, applied math, math for economics and physics. The complete list of courses and time when I run them is:
• “Hilbert and Banach spaces” MM514/815, 5 ECTS, Fall 2010 and 2011;
• “Quantum Field Theory”, 1st part, FY809, 5 ECTS, Spring 2011, 2012 and 2013;
• “Particle Physics”, 1st part, FY816, 5 ECTS, Spring 2015;
• “Convex Analysis” MM525, 5 ECTS, Spring 2011;
• “Iterative Methods” MM532, 5 ECTS, Fall 2012, 2013 and 2014;
• “Computational Science” FF505, 8 ECTS, Spring 2013, 2014 and 2016;
• “Calculus for Mathematics”, MM536, 10 ECTS, 1st year calculus course, Fall 2015, 2016, 2017, 2018, 2019.
Moreover I run a “Science Year Project” NAT501/507 in Spring 2011, 2012 and 2013. This is a project required for first years students at the Faculty of Science.
Since 2010 I have also been external examiner to several other courses such as: “Classical Mechanics”, “Astrophysics”, “Advanced Quantum Mechanics”, “Solar system and Cosmology”, “Introduction to Particle Physics”, “Complex Analysis”, “Curves and Surfaces”, “ODE and geometry”, in addition to several Independent Study Activities (ISA).
While at SDU, I have been (co-)supervisor of 9 Ph.D. students, 2 master thesis and 2 bachelor theses.

Teaching philosophy, methods, materials and tools

As a teacher in science, I believe my main goal is to stimulate curiosity in students and give them the tools to think critically and analytically about problems. Curious students are active students, which make the class environment much more vibrant and enjoyable.

This is, I believe, much more important than just provide them with a set of “pre-packaged” tools or solutions, which can result boring to many students, especially the brighter ones.
When teaching abstract math or theoretical physics, I think it is very beneficial to use a “research-based” attitude: present the material following a critical path of discovery, instead of simply stating the final results. I believe this kind of approach stimulates curiosity in students and as such I consider it a real “research-based” teaching.
Another important method I like to use in my teaching is the use of immediate feedback to students, as I encourage a “trial and error” approach to “discover” new topics. I believe this guided process of knowledge construction can be quite effective, as it really engages students.
Although it is not always possible to structure all lectures in this way, I try to use this approach when possible if a new important topic is presented.
While I strongly advocate the use of multimedia presentations and technology in general for outreach or general public lectures, I privilege the use of traditional blackboard presentations during my math and physics courses as my preferred way of discuss the subject with the students. I find blackboard presentations much superior for discussing more advanced and abstract topics in math and physics as opposed to e.g. slides presentations for a number of reasons: writing on the blackboard gives the students more time to follow the teacher which can show in detail all the logical steps of an argument; the teacher can adjust the speed and argument of presentation to the response of the student in class; it is easier to have active argumentations with the class which can try to suggest alternative approaches and see why and how they fail if not correct. This does not mean that the use of prepared slides and/or multimedia presentations is not very beneficial in some cases. I mainly use them in less advanced classes, where many examples can help the comprehension more than abstract thinking alone, and in introductory classes, especially to motivate the students with “real-life” applications.
For example for the first year calculus course, I wrote all my lecture notes as “Wolfram Mathematica” notebooks which include many interactive illustrations for key concepts, from the simple ones (e.g. the definition of derivative) to more complex (e.g. flux integrals, Stoke’s theorem, etc). By playing with these interactive demonstrations, I feel the students get a better understanding of the topics.
I have received mostly positive evaluations by the students in all the courses I have thought at SDU (not all courses are evaluated though). I happily accept constructive criticisms from the students to improve my courses for the following years. Some comments from the 2016 evaluation of the calculus course: “Godt og professionelt”, “Calculus har været det fag jeg har lært mest i”, “Han gør det godt - Og instruktoren har gjort det virkelig godt med forklaring af materiale!”, “Generelt var kurset rigtig godt, godt tempo og gode eksempler under forlæsningerne.”
My supervisor for the SDU Lecturer Training Program, wrote the following final assessment of my teaching: “Claudio Pica creates a good atmosphere in the lectures where the emphasis is on a coherent presentation of the key ideas of the subject. This is done through well-structured and prepared lessons clearly linked in to the lecture series and the accompanying activities. Claudio Pica makes good use of the blackboard, which is the most appropriate medium for the detailed presentation of the high- level theoretical material in these courses. His approach allows for continual communication with the students and adjustment of the pace.”

Outreach

I enjoy the challenge to introduce research results in my filed to young students and to broad audiences. During my stay at SDU I had the opportunity to give several public lectures for the general public and presentations for visiting high-school students. This is list of events at which I was present as a keynote speaker:• “Supercomputers”, visit of the “akademiet for talentfulde unge” at SDU, 2016• “Supercomputing & eScience at SDU”, Inspire - Educate - Innovate! program at SDU, 2016• Science day at CP3-Origins, visit from Nyborg Gymnasium, February 2015. • Applied Math at IMADA, Studiepraktik 2014, 2015, 2016.• Natural Science Distiguished Lecture at the Faculty of Science SDU, April 2013.• Slagelse Gymnasium (high-school) visit to CP3-Origins, March 2013• Interviewed for the national newspaper “Berlingske” (Science section) (http://www.b.dk/viden/fysikernes-supercomputere-bliver-vildere-og-vildere)• Visit of Sønderborg Statsskole (high-school) to CP3-Origins, May 2013• Visit of the “Academy for Gifted Students” to CP3-Origins, April 2012• One of the 2 main speakers of the public lecture series “High School Tour: Angels & Demons”(see http://cp3-origins.dk/about-cp3/outreach) for promoting high energy physics in high schools (March and April 2010)• Speaker at the “Art & Science 01” exhibition organized by the SDU Centre for Art and Science, and featured on the local TV2-Fyn (see http://cp3-origins.dk/a/4686).• “Science-dagen 2011”, at the Faculty of Science, SDU, on 10 October 2011, to present forefront scientific research to high school teachers.
Recently I am involved as PI for two large outreach activities which received significant funding (in total almost 8M dkk ~ 1M eur) from 5 different private foundations: the “SSC: SDU SuperComputing Challenge” and the “Kvantebanditter” program. For the "Kvantebanditter" program I was responsible for the creation of a web portal and an augmented reality game for smartphones, both of which received the prestigious european awards: both are gold winners for the Lovie awards 2018 and 2019 in the "education" category.
Presenting advanced research to non-specialists is a real challenge and requires appropriate prepa- ration. I try to make all my presentations as clear and enjoiable as possible with a broad use of multimedia tools.My internal supervisor for the SDU Lecturer Training Program, in his final assessment wrote the following in regards to my outreach presentations:“Claudio Pica’s has also presented descriptions of his research to area to various types of non-specialist audiences. He has demonstrated his ability to a range of appropriate modern presentation aids. His talks show a flair for presentation of complicated material for interested non-specialists. Claudio Pica’s confident and calm presentation makes good contact with the audience. Using well chosen examples from every day life combined with a precise use IT equipment Claudio Pica explains complicated ideas and sophisticated connections at high technical level.”