

Thomas Aaby Rytto  
Associate Professor  
Department of Physics, Chemistry and Pharmacy  
SDU eScience Centre  
CP3-Origins  
Email: rytto@cp3.sdu.dk  
Phone: 65502297



## Education

2009 PhD in physics, Niels Bohr Institute  
2006 MSc in physics, Niels Bohr Institute  
2004 BSc in physics and mathematics, Niels Bohr Institute  
2002 Studies in physics and mathematics at Caltech, fall 2002

## Scientific Positions

2013- Associate professor, University of Southern Denmark, CP3-Origins  
2011-2013 Postdoctoral researcher, Harvard University  
2009-2011 Postdoctoral researcher, C. N. Yang Institute for Theoretical Physics, Stony Brook  
2007-2008 Marie Curie Fellow, CERN Theory Division

## Short-term visits

2019 C. N. Yang Institute for Theoretical Physics, Stony Brook University, 1 month  
2019 University of Toronto, 2 months  
2017 C. N. Yang Institute for Theoretical Physics, Stony Brook University, 1 month  
2014 CERN, 1 month  
2008 SLAC, Stanford University, 3 months  
2007 CERN, 2 months  
2005 CERN, 1 month

## Grants and Awards

2016 "Quantum Rascals - Outreach Program". A. P. Møller Foundation. (4mill DKr). With F. Sannino & C. Pica  
2011 "Sapere Aude: DFF Ung-Eliteforsker" prize awarded by the Danish Agency for Science, Technology and Innovation  
2011 FNU postdoc fellowship (2 years)  
2008 Knud Højgaard travel grant to visit SLAC, Stanford  
2007 Marie Curie Fellowship (1 year)  
2005 Lørup Graduate travel grant to visit CERN  
2002 Niels Bohr Institute – Caltech Undergraduate Exchange Fellowship

## Memberships

Board Member, Danish Physical Society, 2016-present  
Associate of the European Centre for Theoretical Studies in Nuclear Physics and Related Areas (ECT\*<sup>\*</sup>).  
Marie Curie Alumni Association.

## Organize

Co-organizer of "Continuum and Lattice Approaches to the Infrared Behavior of Conformal and Quasi-Conformal Gauge Theories" workshop, Simons Center for Geometry and Physics, 2018  
Co-organizer of "Origin of Mass" workshop, Odense, 2013-2016  
Co-organizer of Odense Winter School on Theoretical Physics, 2014-2018  
Co-organizer of Autumn School on Particle Physics and Cosmology, Göttingen, 2013  
Organizer of CP3 World and Fermi visiting programs 2013-2016.  
Organizer of "Quantum City" cultural events.

## Professional Activities

+30 talks given at international conferences and research centers.

Member of Internationalization committee at Faculty of Natural Science, SDU, 2017-present

Referee for: Physical Review Letters, Physical Review D, Physics Letters B, European Physical Journal C, Modern Physics Letters A.

## Publications

### Possible new phase for adjoint QCD

Poppitz, E. & Rytto, T. A., Nov 2019, In : Physical Review D. 100, 091901.

### Ultraviolet to infrared evolution and nonperturbative behavior of $SU(N) \otimes SU(N-4) \otimes U(1)$ chiral gauge theories

Rytto, T. A. & Shrock, R., 1. Sep 2019, In : Physical Review D. 100, 5, 20 p., 055009.

### Large- $N_c$ and Large- $N_f$ Limits of $SU(N_c)$ Gauge Theories with Fermions in Different Representations

Girmohanta, S., Rytto, T. A. & Shrock, R., Jun 2019, In : Physical Review D. 99, 11, 14 p., 116022.

### Safe Glueballs and Baryons

Rytto, T. A. & Tuominen, K., 30. Apr 2019, In : JHEP. 2019, 4, 173.

### Scheme-Independent Calculations of Properties at a Conformal Infrared Fixed Point in Gauge Theories with Multiple Fermion Representations

Rytto, T. A. & Shrock, R., 8. Nov 2018, In : Physical Review D. Particles and fields. 98, 9, 17 p., 096003.

### Scheme-Independent Calculations of Anomalous Dimensions of Baryon Operators in Conformal Field Theories

Gracey, J. A., Rytto, T. A. & Shrock, R., 1. Jun 2018, In : Physical Review D (Particles, Fields, Gravitation and Cosmology). 97, 11, 14 p., 116018.

### Duality in a Supersymmetric Gauge Theory From a Perturbative Viewpoint

Rytto, T. A. & Shrock, R., 15. Mar 2018, In : Physical Review D. 97, 6, 8 p., 065020.

### Physics of the Non-Abelian Coulomb Phase: Insights from Padé approximants

Rytto, T. A. & Shrock, R., 15. Jan 2018, In : Physical Review D. 97, 2, 24 p., 025004.

### $\beta_{IR}$ at an Infrared Fixed Point in Chiral Gauge Theories

Rytto, T. A. & Shrock, R., Jan 2018, In : Physical Review D. 97, 1, 11 p., 016020.

### Conformal Phase Diagram of Complete Asymptotically Free Theories

Pica, C., Rytto, T. A. & Sannino, F., 2017, In : Physical Review D. 96, 7, 14 p., 074015.

### Higher-Order Scheme-Independent Calculations of Physical Quantities in the Conformal Phase of a Gauge Theory

Rytto, T. A. & Shrock, R., 2017, In : Physical Review D. 95, 8

### Higher-Order Scheme-Independent Series Expansions of $\gamma_{\bar{\psi}\psi,IR}$ and $\beta'_{IR}$ in Conformal Field Theories

Rytto, T. A. & Shrock, R., 2017, In : Physical Review D. 95, 10, 37 p., 105004.

### Infrared Fixed Point Physics in $SU(N_c)$ and $Sp(N_c)$ Gauge Theories

Rytto, T. A. & Shrock, R., 2017, In : Physical Review D. 96, 10, 17 p., 105015.

### On the Question of a Possible Infrared Zero in the Beta Function of the Finite- $N$ Gross-Neveu Model

Choi, G., Rytto, T. & Shrock, R., 2017, In : Physical Review D. 95, 2, 10 p., 025012.

**Scheme-Independent Calculations of Physical Quantities in an  $\mathcal{N}=1$  Supersymmetric Gauge Theory**  
Ryttov, T. A. & Shrock, R., 2017, In : Physical Review D. 96, 10, 25 p., 105018.

**Consistent Perturbative Fixed Point Calculations in QCD and Supersymmetric QCD**  
Ryttov, T. A., 2016, In : Physical Review Letters. 117, 7, p. 1-6 071601.

**Infrared Zero of  $\beta\beta$  and Value of  $\gamma_m$  for an SU(3) Gauge Theory at the Five-Loop Level**  
Ryttov, T. A. & Shrock, R., 2016, In : Physical Review D. 94, 10, p. 1-5 105015.

**Quantum Critical Behaviour of Semisimple Gauge Theories**  
Kamuk Esbensen, J., Ryttov, T. A. & Sannino, F., 2016, In : Physical Review D. 93, 4, p. 1-13 045009.

**Scheme-Independent Calculation of  $\gamma_{\{\bar{\psi}\psi, IR\}}$  for an SU(3) Gauge Theory**  
Ryttov, T. A. & Shrock, R., 2016, In : Physical Review D. 94, 10, p. 1-5 105014.

**Scheme-Independent Series Expansions at an Infrared Zero of the Beta Function in Asymptotically Free Gauge Theories**  
Ryttov, T. A. & Shrock, R., 2016, In : Physical Review D. 94, 12, p. 1-25 125005.

**Nonperturbative results for two-index conformal windows**  
Bergner, G., Ryttov, T. A. & Sannino, F., 2015, In : Journal of High Energy Physics (JHEP). 2015, 12, 11 p., 54.

**Conformal Behavior at Four Loops and Scheme (In)Dependence**  
Ryttov, T., 25. Sep 2014, In : Physical Review D. 056007 .

**Vacuum Alignment with more Flavors**  
Ryttov, T., 3. Jun 2014, In : Physical Review D. 89, 116003.

**Infrared Fixed Points in the minimal MOM Scheme**  
Ryttov, T., 5. Mar 2014, In : Physical Review D. 89, 056001.

**Higher Loop Corrections to the Infrared Evolution of Fermionic Gauge Theories in the RI' Scheme**  
Ryttov, T., 2014, In : Physical Review D. 89, 9 p., 016013.

**An Analysis of Scheme Transformations in the Vicinity of an Infrared Fixed Point**  
Ryttov, T. & Shrock, R., 28. Jun 2012, In : Physical Review D.

**Scheme Transformations in the Vicinity of an Infrared Fixed Point**  
Ryttov, T. & Shrock, R., 11. Jun 2012, In : Physical Review D. 86, 5 p., 065032.

**Comparison of Some Exact and Perturbative Results for a Supersymmetric SU( $N_c$ ) Gauge Theory**  
Ryttov, T. & Shrock, R., 2012, In : Physical Review D.

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

**Technicolor Models with Color-Singlet Technifermions and their Ultraviolet Extensions**  
Ryttov, T. & Shrock, R., 18. Jul 2011, In : Physical Review D.

**Higher-Loop Corrections to the Infrared Evolution of a Gauge Theory with Fermions**  
Ryttov, T. & Shrock, R., 20. Nov 2010, In : Phys.Rev.D.

**Patterns of Dynamical Gauge Symmetry Breaking**

Chen, N., Rytov, T. & Shrock, R., 18. Oct 2010, In : Phys.Rev.D.

**Ultraviolet Extension of a Model with Dynamical Electroweak Symmetry Breaking by Both Top-Quark and Technifermion Condensates**

Rytov, T. & Shrock, R., 28. Jun 2010, In : Physical Review D.

**Infrared Evolution and Phase Structure of a Gauge Theory Containing Different Fermion Representations**

Rytov, T. & Shrock, R., 2. Jun 2010, In : Phys.Rev.D.

**Higher extended technicolor representations and fermion generations**

Rytov, T. & Shrock, R., 20. May 2010, In : Eur.Phys.J.C.

**Generational Structure of Models with Dynamical Symmetry Breaking**

Rytov, T. & Shrock, R., 12. Apr 2010, In : Physical Review D.

**Conformal House**

Rytov, T. & Sannino, F., 2010, In : International Journal of Modern Physics A. 25, 24, p. 4603-4521

**The Electroweak Phase Transition in Ultra Minimal Technicolor**

Jarvinen, M., Rytov, T. & Sannino, F., 14. May 2009, In : Physical Review D. Particles and fields. 79, p. 095008 18 p.

**The Conformal Window and Walking Technicolor**

Rytov, T., 3. Feb 2009, In : Nucl.Phys.Proc.Suppl..

**Extra Electroweak Phase Transitions from Strong Dynamics**

Järvinen, M., Rytov, T. A. & Sannino, F., 2009, In : Physics Letters B. B680, 3, p. 251-254

**Supersymmetry Inspired QCD Beta Function**

Rytov, T. & Sannino, F., 2008, In : Physical Review D. 17 p.

**Ultraminimal technicolor and its dark matter technicolor interacting massive particles**

Rytov, T. A. & Sannino, F., 2008, In : Physical Review D. Particles and fields. 78, 11, 13 p., 115010.

**Conformal Windows of SU(N) Gauge Theories, Higher Dimensional Representations and The Size of The Unparticle World**

Rytov, T. & Sannino, F., 5. Nov 2007, In : Phys.Rev.D.

**Minimal Walking Technicolor: Set Up for Collider Physics**

Foadi, R., Frandsen, M. T., A. Rytov, T., Rytov, T. & Sannino, F., 12. Jun 2007, In : Physical Review D. 76, 5, 17 p., 055005.

**Gauge Coupling Unification via A Novel Technicolor Model**

Bjarke Gudnason, S., Rytov, T. & Sannino, F., 2007, In : Physical Review D. 76, 1, 9 p., 015005.

**Hidden QCD in Chiral Gauge Theories**

Rytov, T. & Sannino, F., 16. Sep 2005, In : Phys.Rev. D.

**Chiral Models in Noncommutative N=1/2 Four Dimensional Superspace**

Rytov, T. & Sannino, F., 12. Apr 2005, In : Phys.Rev. D.