

About nonassociativity in mathematics and physics

Lõhmus, Jaak; **Paal, Eugen**; Sorgsepp, Leo Acta applicandae mathematicae 1998 / p. 3-31
<https://link.springer.com/article/10.1023/A:1005854831381>

AGMF'2007 Göteborgis

Paal, Eugen Aastaraamat 2007 / Eesti Matemaatika Selts 2012 / lk. 178

Algebra Geometry Mathematical Physics VIII

2013

Algebra, geomeetria ja matemaatiline füüsika. 5. rahvusvaheline konverents, Bedlewo, Poola, 12.-16. oktoober 2009

Paal, Eugen Aastaraamat 2009 / Eesti Matemaatika Selts 2010 / lk. 272-273

Algebra, geomeetria ja matemaatilise füüsika rahvusvaheline seminar AGMF'05 Tallinnas

Paal, Eugen; Puusepp, Peeter Aastaraamat 2005 / Eesti Matemaatika Selts 2006 / lk. 241-242

Algebra, geometry and mathematical physics

2011 https://www.ester.ee/record=b5749782*est

Algebra, geometry and mathematical physics : AGMP, Mulhouse, France, October 2011

2014 https://www.ester.ee/record=b4425009*est

Analytic Moufang-transformations

Paal, Eugen 1988 https://www.ester.ee/record=b1229781*est

Birepresentation of Mal'tsev Algebras

Paal, Eugen International Congress on Algebra in Memory of A.L.Shirsov : Barnaul, August 20-25 : theses on ring theory, algebras and modules : abstracts 1991 / p. 172

Birepresentations of derivative moufang loops

Paal, Eugen Eesti Teaduste Akadeemia Toimetised. Füüsika. Matemaatika 1991 / 2, lk. 105-111

Birepresentations of Mal'tsev algebras

Paal, Eugen Tallinna Tehnikaülikooli Toimetised 1994 / lk. 19-32

Coalgebra, cocomposition and cohomology

Oziewicz, Zbigniew; **Paal, Eugen**; Rozanski, Jerzy Non-associative algebra and its applications 1994 / p. 314-322

Coassociativity, cohomology and Gerstenhaber algebras

Paal, Eugen Algebras, groups and geometries 1998 / p. 85-93

Coassociativity, cohomology and quantum determinant

Oziewicz, Zbigniew; **Paal, Eugen**; Rozanski, Jerzy Algebras, groups and geometries 1995 / p. 99-109

https://www.researchgate.net/publication/269024862_Coassociativity_cohomology_and_quantum_determinant
https://www.ester.ee/record=b3376117*est

Continuous Moufang transformations

Paal, Eugen Acta applicandae mathematicae 1998 / p. 77-91

Derivations in braided geometry

Oziewicz, Zbigniew; **Paal, Eugen**; Rozanski, Jerzy Acta physica Polonica. Series B 1995 / 7, p. 1253-1273: ill

Derivative birepresentations of Moufang loops

Paal, Eugen Matemaatika teoreetilisi ja rakenduslikke küsimusi : konverentsi ettekannete teesid : 21-22. IX 1990 = Problems of pure and applied mathematics : abstracts of conference : 21-22. IX 1990 = Проблемы теоретической и прикладной математики : тезисы докладов конференции : 21-22. IX 1990 1990 / lk. 15-16 https://www.ester.ee/record=b1247144*est

Derivative moufang transformations

Paal, Eugen Group Theoretical Methods in Physics : proceedings of 18th International Colloq., Moscow, June 4-9, 1991 1991 / p. 573-574

Dynamical deformations of three-dimensional Lie algebras in Bianchi classification over the harmonic oscillator

Paal, Eugen; Virkepu, Jüri Journal of mathematical physics 2009 / p. 053523-1 - 053523-8

Generalized Lie theory in mathematics, physics and beyond

Silvestrov, Sergei; **Paal, Eugen**; Abramov, Viktor; Stolin, Alexander 2009 <https://link.springer.com/book/10.1007/978-3-540-85332-9>

Geodesic loops and BRST-like cohomology

Kuusk, Piret; **Paal, Eugen** Proceedings of the Estonian Academy of Sciences. Physics. Mathematics 1996 / 2/3, p. 128-133

Geodesic multiplication and BRST-like operator

Kuusk, Piret; **Paal, Eugen** Matemaatika teoreetilisi ja rakenduslikke küsimusi : teesid, 13.-14. oktoober 1995 = Problems of pure and applied mathematics : abstracts 1995 / [1] lk

Geodesic multiplication and BRST-like operators

Kuusk, Piret; **Paal, Eugen** General relativity and gravitation 1996 / 8, p. 991-998

Geodesic multiplication and geodesic translations as a generalization of Poincare shifts

Kuusk, Piret; Örd, Jüri; **Paal, Eugen** 15th International Conference on General Relativity and Gravitation, Pune, India, 16.-21. December 1997 : abstracts 1998 / [1] p

Geodesic multiplication and geometrical BRST-like operators

Kuusk, Piret; Örd, Jüri; **Paal, Eugen** Proceedings of the Estonian Academy of Sciences. Physics. Mathematics 1995 / 4, p. 437-449

Geodesic multiplication and the theory of gravity

Kuusk, Piret; Örd, Jüri; **Paal, Eugen** Journal of mathematical physics 1994 / 1, p. 321-334

Geodesic multiplication as a tool for classical and quantum gravity

Kuusk, Piret; **Paal, Eugen** Tallinna Tehnikaülikooli Toimetised 1992 / lk. 33-42

Geodesic multiplication as a tool for classical and quantum gravity : abstract

Kuusk, Piret; **Paal, Eugen** 1992

Geodesic multiplication in the theory of gravity

Kuusk, Piret; **Paal, Eugen** Proceedings of the 2nd Alexander Friedmann Institute seminar on gravitation and cosmology, St.Petersburg, 1994 1994 / p. 324-335

Graph Operad Logic X

2013

Harilikud diferentsiaalvõrrandid

Paal, Eugen 2016

Homological modelling of the electric circuits

Paal, Eugen; Umbleja, Märt Moduli Operads Dynamics II 2014

How to compose Lagrangian?

Paal, Eugen; Virkepu, Jüri Generalized Lie theory in mathematics, physics and beyond 2009 / p. 131-140

Invitation to composition

Kluge, Liivi; **Paal, Eugen**; Stasheff, Jim Communications in algebra 2000 / 3, p. 1405-1422

Invitation to operadic dynamics

Paal, Eugen Journal of generalized Lie theory and applications 2007 / 1, p. 57-63

https://www.researchgate.net/publication/49598955_Invitation_to_operadic_dynamics

Jaak Lõhmus : 28.09.1937-23.02.2006

Vesman, Elmar; **Paal, Eugen** Eesti Füüsika Seltsi aastaraamat 2006 2007 / lk. 19-20

Jacobi operators of quantum counterparts of three-dimensional real Lie algebras over the harmonic oscillator

Paal, Eugen; Virkepu, Jüri Algebra, geometry and mathematical physics 2011 / p. 199-209

Journal of generalized Lie theory and applications

Paal, Eugen; Silvestrov, Sergei 2007 https://www.ester.ee/record=b2262967*est

Journal of physics : conference series

2012 <https://iopscience.iop.org/journal/1742-6596>

KRON's one page N/W manual

Paal, Eugen ASTRALGO Science 2015 / p. 1504

Lineaaralgebra

Paal, Eugen 2004 http://www.ester.ee/record=b1926837*est

Lineaaralgebra elemente

Paal, Eugen 2000 https://www.ester.ee/record=b1386301*est

Lineaaralgebra [Võrguteavik] : veebiõpik

Paal, Eugen 2006 https://www.ester.ee/record=b1994639*est <https://digikogu.taltech.ee/et/Item/9b042ff9-519b-4765-8c2b-1df7142664eb>

Local differentiable loops and BRST-like cohomology

Kuusk, Piret; **Paal, Eugen** Algebras, groups and geometries 1996 / p. 465-469

Mal'tsev algebras and conservation laws

Lõhmus, Jaak; **Paal, Eugen**; Sorgsepp, Leo Contemporary mathematics 1995 / p. 281-290

Mal'tsev algebras and conservation laws

Lõhmus, Jaak; **Paal, Eugen**; Sorgsepp, Leo Abst. II Int. Wigner Symposium, Goslar, July 15-20, 1991 1991 / p. 75

Mal'tsev algebras and triality

Paal, Eugen Journal of physics : conference series 2012 / p. 012015 <https://iopscience.iop.org/article/10.1088/1742-6596/346/1/012015>

Matemaatika. Füüsika

Paal, Eugen; Ruus, Tõnu; Suurvarik, Pavel; Tammeraid, Ivar; Vichmann, Frederik 1994 https://www.ester.ee/record=b1065772*est

Matemaatilise füüsika võrrandid

Paal, Eugen 2015

Mitteassotsiatiivsed algebrad füüsikas

Lõhmus, Jaak; **Paal, Eugen**; Sorgsepp, Leo Aastaraamat 1994 - 1996 / Eesti Matemaatika Selts 1999 / lk. 30-35

Mitteassotsiatiivsed algebrad füüsikas (monograafia) : Nonassociative algebras in Physics. Hadronic Press, Palm Harbour, USA. 1994 : [tutvustus]

Lõhmus, Jaak; **Paal, Eugen**; Sorgsepp, Leo Eesti Teaduste Akadeemia aastaaruanne 1994 1995 / lk. 50-51: ill

Moduli Operads Dynamics I

2013

Moduli Operads Dynamics II

2014

Moufang loops and generalized Lie equations

Paal, Eugen Eesti Teaduste Akadeemia Toimetised. Füüsika. Matemaatika 1992 / 2, lk. 125-132

Moufang loops and generalized Lie-Cartan theorem

Paal, Eugen Journal of generalized Lie theory and applications 2008 / 1, p. 45-49 <https://www.hilarispublisher.com/open-access/moufang-loops-and-generalized-liecartan-theorem-1736-4337-2-114.pdf>

Moufang loops and generalized Maurer-Cartan equations

Paal, Eugen 11-th International Conference "Symmetry Methods in Physics" 2004 / [1] p

Moufang loops and generalized Maurer-Cartan equations

Paal, Eugen International Conference "Non-commutative Geometry and Representation Theory in Mathematical Physics" 2004 / [1] p

Moufang loops and integrability of generalized Lie equations

Paal, Eugen Abstr. XIII Int.Coll. "Integrable Systems and Quantum Groups" 2004 / p. 17-19

Moufang loops and integrability of generalized Lie equations

Paal, Eugen Czechoslovak journal of physics 2004 / 11, p. 1375-1380 <https://link.springer.com/article/10.1007/s10582-004-9804-0>

Moufang loops and Lie algebras

Paal, Eugen Czechoslovak journal of physics 2003 / p. 1101-1104 <https://link.springer.com/article/10.1023/B:CJOP.0000010540.18158.dc>

Moufang loops and Lie algebras

Paal, Eugen Abstracts : 12th International Colloquium Quantum Groups and Integrable Systems : Prague, 2003 2003
<https://link.springer.com/article/10.1023/B:CJOP.0000010540.18158.dc>

Moufang symmetries and conservation laws

Paal, Eugen; Lõhmus, Jaak; Sorgsepp, Leo Eesti Teaduste Akadeemia Toimetised. Füüsika. Matemaatika 1992 / 2, lk. 133-141

Moufang symmetry I. Associators and Akivis identity. Generalized Lie and Maurer-Cartan equations

Paal, Eugen ASTRALGO Science 2016 / art. 1602, [6] p <http://www.astralgo.com/2382-672X/1602.php>

Moufang transformations and Noether currents

Paal, Eugen Generalized Lie theory in mathematics, physics and beyond 2009 / p. 3-8
<https://ui.adsabs.harvard.edu/abs/2006math.ph...2023P/abstract>

Nonassociative algebras in physics

Lõhmus, Jaak; **Paal, Eugen**; Sorgsepp, Leo 1994

Note on 2d binary operadic harmonic oscillator

Paal, Eugen; Virkepu, Jüri Journal of generalized Lie theory and applications 2008 / 3, p. 221-225
<https://www.hilarispublisher.com/open-access/note-on-d-binary-operadic-harmonic-oscillator-1736-4337-2-140.pdf>

Note on analytic Moufang loops

Paal, Eugen Commentationes mathematicae Universitatis Carolinae 2004 / 2, p. 349-354 <https://eudml.org/doc/249351>

Note on analytic Moufang loops

Paal, Eugen Abstracts of International Conference : Loop'03 : Prague, 2003 2003 <https://eudml.org/doc/249351>

Note on homological modeling of the electric circuits

Paal, Eugen; Umbleja, Märt 3Quantum : Algebra Geometry Information (QQQ Conference 2012) : 10-13 July 2012, Tallinn, Estonia : dedicated to memory of Professor Jean-Louis Loday (1936-2012) 2014 / p. 1-7 <https://doi.org/10.1088/1742-6596/532/1/012022>
[Conference proceedings at Scopus](#) [Article at Scopus](#) [Article at WOS](#)

Note on Moufang-Noether currents

Paal, Eugen Czechoslovak journal of physics 2006 / 10/11, p. 1257-1262 <https://arxiv.org/pdf/math-ph/0606054.pdf>

Note on operadic harmonic oscillator

Paal, Eugen; Virkepu, Jüri Reports on mathematical physics 2008 / 2, p. 207-212
<https://www.sciencedirect.com/science/article/abs/pii/S0034487708800080>

Note on operadic non-associative deformations

Paal, Eugen Journal of nonlinear mathematical physics 2006 / Supplement, August, p. 87-92 <https://www.atlantis-press.com/journals/jnmp/372>

Note on star-triangle equivalence in conducting networks

Paal, Eugen; Umbleja, Märt ASTRALGO Science 2015 / p. 1501-1 - 1501-4 : ill

On algebraic structure of pre-operad

Kluge, Liivi 2002 https://www.ester.ee/record=b1688674*est

On currents and symmetries associated with Mal'tsev algebras

Lõhmus, Jaak; **Paal, Eugen**; Sorgsepp, Leo 1989 https://www.ester.ee/record=b1209537*est

On derivation deviations in an abstract pre-operad

Kluge, Liivi; **Paal, Eugen** Communications in algebra 2001 / p. 1609-1626
https://www.researchgate.net/publication/2099024_On_derivation_deviations_in_an_abstract_pre-operad

On invariants of continuous Moufang transformations

Paal, Eugen Квазигруппы и неассоциативные алгебры в физике 1990 / p. 98-106 https://www.ester.ee/record=b1214235*est

On Lagrange formalism for Lie theory and operadic harmonic oscillator in low dimensions = Lagrange'i formalismist Lie teooriale ja harmooniline operaadostsillaator madalates dimensioonides

Virkepu, Jüri 2009 https://www.ester.ee/record=b2540604*est

Operadic deformation as a tool for cogravity

Paal, Eugen Abstracts of 11th International Colloquium "Quantum groups and Integrable Systems" 2002 / ? p

<https://link.springer.com/article/10.1023/A:1021397306799>

Operadic deformations as a tool for cogravity

Paal, Eugen Czechoslovak journal of physics 2002 / 11, p. 1277-1282 <https://link.springer.com/article/10.1023/A:1021397306799>

Operadic Heisenberg-like equation

Paal, Eugen Graph Operad Logic X 2013

Operadic quantization as a tool for discrete geometry

Paal, Eugen; Virkepu, Jüri 3Quantum : Algebra Geometry Information (QQQ Conference 2012) : 10-13 July 2012, Tallinn, Estonia : dedicated to memory of Professor Jean-Louis Loday (1936-2012) 2014 / p. 1-9 <https://doi.org/10.1088/1742-6596/532/1/012023>
[Conference proceedings at Scopus](#) [Article at Scopus](#) [Article at WOS](#)

Operadic representations of harmonic oscillator in some 3d algebras

Paal, Eugen; Virkepu, Jüri Journal of generalized Lie theory and applications 2009 / 1, p. 53-59

Operads and cohomology

Kluge, Liivi; Paal, Eugen Algebras, groups and geometries 2004 / p. 1-7

Operads and deformations

Paal, Eugen Algebras, groups and geometries 2005 / p. 193-200

Operads and nonassociative deformations

Paal, Eugen Non-associative algebra and its applications 2006 / p. 323-328

<https://www.taylorfrancis.com/chapters/edit/10.1201/9781420003451-34/operads-nonassociative-deformations-eugen-paal>

Operads for x-physics

Paal, Eugen Czechoslovak journal of physics 2001 / 12, p. 1407-1413

Operads for x-physics

Paal, Eugen Abstracts of 10th International Colloquium "Quantum Groups and Integrable Systems" : Prague, 21-23 June, 2001 2001 / p. 8 https://www.researchgate.net/publication/226036969_Operads_for_x-physics

Operads, cohomology, and deformations

Paal, Eugen New Developments in Mathematical Physics Research 2004 / p. 117-129

Plane rotations and Hamilton-Dirac mechanics

Paal, Eugen; Virkepu, Jüri Czechoslovak journal of physics 2005 / p. 1503-1508 <https://link.springer.com/article/10.1007/s10582-006-0032-7>

Preface

Makhlouf, Abdenacer; **Paal, Eugen**; Silvestrov, Sergei; Stolin, Alexander Algebra, geometry and mathematical physics : AGMP, Mulhouse, France, October 2011 2014 / p. vii-ix

Preface to "Algebra, Geometry, and Mathematical Physics 2010"

Abramov, Viktor; Fuchs, Jürgen; **Paal, Eugen**; Shestopalov, Y.; Silvestrov, Sergei; Stolin, Alexander Journal of physics : conference series 2012 / p. 0111001 <https://ui.adsabs.harvard.edu/abs/2012JPhCS.346a1001S/abstract>

q-Tetratransformations in conducting networks

Paal, Eugen ASTRALGO Science 2015 / p. 1503-1 - 1503-2 : ill

Quantum counterparts of three-dimensional real Lie algebras over harmonic oscillator

Paal, Eugen; Virkepu, Jüri Central European journal of physics 2009 / [7] p <https://www.degruyter.com/document/doi/10.2478/s11534-009-0123-8/html?lang=en>

Quantum kinematics of a test particle in a curved spacetime

Kuusk, Piret; Örd, Jüri; **Paal, Eugen** Class. Quantum Grav 1997 / p. 2917-2926

Quantum of V_{IIa} , $III_a=1$, $VI_a=1$ over the harmonic oscillator in semiclassical approximation

Paal, Eugen; Virkepu, Jüri Proceedings of the Estonian Academy of Sciences 2010 / 4, p. 347-354

Seminar "Algebra ja tema rakendused" : Nelijärve, 7.-8. mai 2005

Paal, Eugen; Puusemp, Peeter Aastaraamat 2005 / Eesti Matemaatika Selts 2006 / lk. 243-244

Sissejuhatus operaadarvutusse

Kluge, Liivi; Paal, Eugen Aastaraamat 1999 / Eesti Matemaatika Selts 2001 / lk. 13-26

SO(2) and Hamilton-Dirac mechanics

Burdik, Cestmir; **Paal, Eugen; Virkepu, Jüri** Journal of nonlinear mathematical physics 2006 / Supplement, August, p. 37-43
<https://www.tandfonline.com/doi/abs/10.2991/jnmp.2006.13.s.5>

Some applications of geodesic loops and nonlinear geometric algebra in the theory of gravity

Kuusk, Piret; **Paal, Eugen** Acta applicandae mathematicae 1998 / p. 67-76

Tetracomposition

Kluge, Liivi; Paal, Eugen Communications in contemporary mathematics 2002 / 3, p. 435-456

Tetratransformations in conducting networks

Paal, Eugen; Umbleja, Märt ASTRALGO Science 2015 / p. 1502-1 - 1502-4 : ill

The Moufang'-Mal'tsev symmetries and conservation laws in field theory

Lõhmus, Jaak; **Paal, Eugen**; Sorgsepp, Leo Abst. Int. Con. on Algebra in memory of A.I.Shirshov, Barnaul, August 20-25 1991 : theses on alg. geometry and appl. of algebra in geometry, analysis and theoretical physics 1991 / p. 21

The operadic modeling of gauge systems of the Yang-Mills type

Paal, Eugen Reports on mathematical physics 2014 / p. 109-126 : ill [https://doi.org/10.1016/S0034-4877\(14\)60061-6](https://doi.org/10.1016/S0034-4877(14)60061-6) [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Three graphical operadic compositions for rooted trees

Paal, Eugen ASTRALGO Science 2015 / p. 1505-1 - 1505-3 : ill

3Quantum : Algebra Geometry Information

Paal, Eugen; Kuusk, Piret; Stolin, Alexander 3Quantum : Algebra Geometry Information (QQQ Conference 2012) : 10-13 July 2012, Tallinn, Estonia : dedicated to memory of Professor Jean-Louis Loday (1936-2012) 2014 / p. 1-7 <https://doi.org/10.1088/1742-6596/532/1/011001> [Conference proceedings at Scopus](#) [Article at Scopus](#) [Article at WOS](#)

3Quantum : Algebra Geometry Information (QQQ Conference 2012) : 10-13 July 2012, Tallinn, Estonia : dedicated to memory of Professor Jean-Louis Loday (1936-2012)
2014

2D binary operadic Lax representation for harmonic oscillator

Paal, Eugen; Virkepu, Jüri Noncommutative structures in mathematics and physics : 22-26 juli 2008 2010 / p. 209-216
https://www.researchgate.net/publication/1913785_2D_binary_operadic_Lax_representation_for_harmonic_oscillator

Введение в Муфанг-симметрию

Paal, Eugen 1987 https://www.ester.ee/record=b1223099*est

Муфанг-Мальцевская симметрия

Paal, Eugen Eesti Teaduste Akadeemia Toimetised. Füüsika. Matemaatika 1993 / 2, lk. 157-165

Муфанг-преобразования

Paal, Eugen Фундаментальные взаимодействия : [сборник статей] 1987 / с. 142-158 https://www.ester.ee/record=b1590575*est

Неассоциативность в математике и физике

Paal, Eugen; Lõhmus, Jaak; Sorgsepp, Leo Квазигруппы и неассоциативные алгебры в физике 1990 / с. 8-22 : ил
https://www.ester.ee/record=b1214235*est

О бикомбинаторном представлении луп Муфанг

Paal, Eugen Фундаментальные поля : [посвящается 60-летию М. Кыйва] 1989 / с. 104-124
https://www.ester.ee/record=b1292565*est

О неассоциативном расширении теоретико-группового метода на основе луп Муфанг и алгебр Мальцева

Paal, Eugen Международная конференция по алгебре, посвященная памяти А. И. Мальцева (1909-1967), (Новосибирск, 21-26 августа 1989 г.) : тезисы докладов по теории моделей и алгебраичных систем 1989 / с. 97
https://www.ester.ee/record=b1553529*est

О неассоциативном расширении теоретико-группового метода на основе луп Муфанг и алгебр Мальцева : автореферат ... кандидата физико-математических наук (01.04.02)

Paal, Eugen 1989 https://www.ester.ee/record=b1225404*est

О неассоциативном расширении теоретико-группового метода на основе луп Муфанг и алгебр Мальцева :
диссертация на соискание ученой степени кандидата физико-математических наук
Paal, Eugen 1989 https://www.ester.ee/record=b4458645*est