

physics overflow

A high-quality physics Q&A site
and open peer-review system

Outline

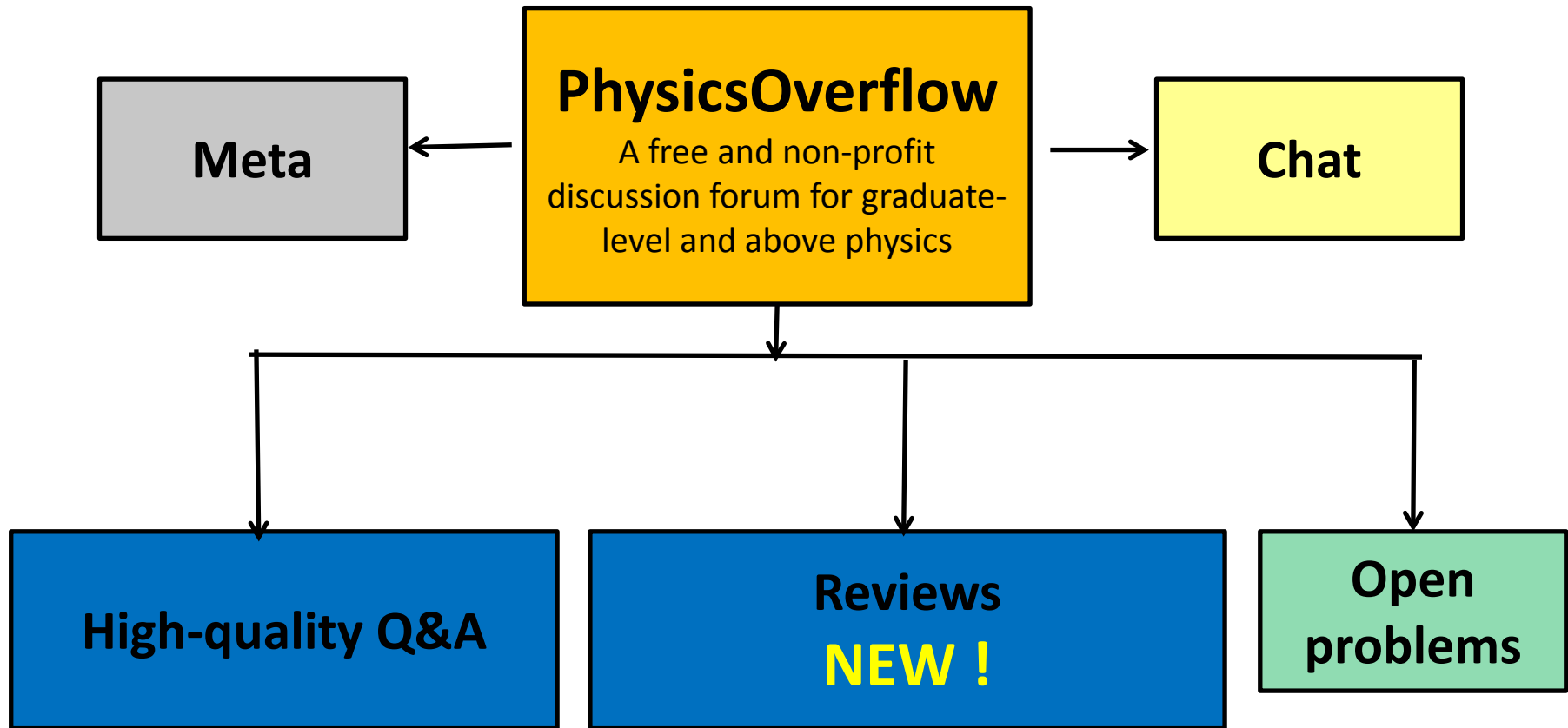
- Introductory remarks
- The Question&Answers section
- The Reviews section
- Time for discussion and questions

Why another physics site?

- Since [Theoretical Physics SE](#) was closed, a high-level site for physics (in analogy to [MathOverflow](#)) was missing.
- Other existing physics sites and fora such as
 - [Quora](#): rather popular level Q&A, not only about physics
 - [Physics Forums](#): content not votable, not an isolated graduate-level site
 - [Physics SE](#): general physics site for all levels, intended to build up a „clean“ library for the masses of Googlers were not suitable to our needs
- Journal peer-reviewing is outdated and sometimes even blatantly sucks

 **Reviews** section of PhysicsOverflow

The organisation of PhysicsOverflow



PhysicsOverflow in a nutshell

- **Self government:** no externally prescribed goals, rules, guidelines, etc to fulfill
- **Frankness:** “robust” discussions allowed (we are all grown ups)
- **Community moderation:** People who have proven themselves by earning reputation can moderate the content
- **Meta and Blog:** to discuss about the site itself
- **Software:** Modified Question2Answers, with a number of (self-developed) plugins installed
- **Support:** admin@physicsoverflow.org
- Detailed site description in the [FAQ](#)

The Q&A section

... is meant to be a nice place where the international community of physicists, advanced students and knowledgeable enough enthusiasts can enjoy doing and learning physics together.

On-topic subfields:

- ✓ Theoretical physics
- ✓ Phenomenology
- ✓ Experimental physics
- ✓ Astronomy
- ✓ For physicists relevant mathematics
- ✓ Applied physics
- ✓ Computational physics
- ✓ General physics
- ✓ Community Nowiki

Off-topics:

- ⚡ Engineering
- ⚡ Below graduate-level physics
- ⚡ Non-mainstream physics
- ⚡ Copy-paste of homework
- ⚡ Why is bamboo poisonous to humans but not to pandas
- ⚡ Rhetorical/insincere questions

www.physicsoverflow.org

quantum-mechanics oa.operator-algebras mathematical-physics category-theory

triangulated/derived categories in Physics and algebraic geometry
retagged 2 days ago in Theoretical Physics by dimension10 (1,475 points)
algebraic-geometry string-theory mathematical-physics category-theory
soft-question

Why are complex structures important in physics.
answer edited 2 days ago in Theoretical Physics by 40227 (1,500 points)
manifolds kahler-manifolds

Which presentations of (non)planar algebras give rise to knots?
edited 4 days ago in Theoretical Physics by Dilaton (3,495 points)
knot-theory singularity-theory planar-algebras quantum-topology

Explanation of Detailed Balance in Horava-Lifshitz Gravity?
commented 4 days ago in Theoretical Physics by Dilaton (3,495 points)
quantum-gravity

7.59 score 1 review 327 views
Solving the 3d Ising Model with the Conformal Bootstrap II. c-Minimization and Precise Critical Exponents
commented 4 days ago in cond-mat by Jia Yiyang (780 points)
hep-th cond-mat.stat-mech cond-mat.str-el hep-lat math-ph

8.15 score 1 review 497 views
Solving the 3D Ising Model with the Conformal Bootstrap
commented 4 days ago in cond-mat by Jia Yiyang (780 points)
hep-th condensed-matter statistical-mechanics conformal-field-theory
quantum-field-theory

Uniqueness for solution of a d-dbar system related to Davey-Stewartson Solitons
retagged 4 days ago in Mathematics by anonymous

Attributions

ARCHIVE

INTERNET

(propose a free ad)

Most popular tags

quantum-field-theory

string-theory quantum-mechanics mathematical-physics

All categories

- Q&A (1978)
- Reviews (48)
- Open problems (2)
- Meta (288)
- Chat (7)

Submission

The Q&A section: How it works

- Anyone may [ask](#) an (on topic) question
- Anyone may [answer](#), partial answers are welcome too
- Further discussion may happen in [votable comments](#)
- Votings: ± 5 for questions, ± 10 for answers, comments rep neutral
- New users can [register](#) or [regain](#) access to their account, if it is already imported from a Stack Exchange site

What it looks like: an example

The screenshot shows a web browser displaying a post on PhysicsOverflow. The post title is "What is elliptic genera?". The post content asks for intuition on the term "elliptic genera". The post has 104 views and is marked as "imported from StackExchange Physics". The post is by user "phy_math" and has 45 points. The post is tagged with "string-theory", "mathematical-physics", "differential-geometry", and "topology". The post is asked 6 days ago in the "Theoretical Physics" category. The post has 2 answers. The first answer is by user "suresh" and has 5 upvotes. The answer states that "genus" is a mathematical term and provides a link to the Wikipedia page "Genus of a multiplicative sequence". The answer also mentions that the elliptic genus of a manifold when its arguments are specialised gives the Euler characteristic and the Hirzebruch signature. The post and the first answer are both annotated with orange circles and arrows. The post is annotated with the text "Up- and down-votes displayed" and the first answer is annotated with the text "Up and down-votable comment". The post is also annotated with the text "SE Attribution" and an arrow pointing to the "imported from StackExchange" text. The right sidebar contains a welcome message, a "News" section, and "Tools for paper authors" and "Tools for SE users" sections.

Up- and down-votes displayed

Up and down-votable comment

SE Attribution

What is elliptic genera?

104 views

+3
-0

What is **elliptic genera** in physics? Reading many relevant papers, they just defined **elliptic genus** as sort of partition function. I try to find useful materials to explain it, but I couldn't find it. Can you give some intuition for this terminology in physical view?

This post imported from StackExchange Physics at 2014-09-06 13:34 (UCT), posted by SE-user phy_math

string-theory mathematical-physics differential-geometry topology

asked 6 days ago in Theoretical Physics by phy_math (45 points)

edit flag close hide comment suggest edits vote to close

It's a mathematical term. See here: en.wikipedia.org/wiki/Genus_of_a_multiplicative_sequence The elliptic genus of a manifold when its arguments are specialised gives the Euler characteristic and the Hirzebruch signature.

This post imported from StackExchange Physics at 2014-09-06 13:34 (UCT), posted by SE-user suresh

commented 5 days ago by suresh

2 Answers

+5

There is a mathematical definition of **genus** in general and of **elliptic genus** in particular, which you may or may not find enlightning. It says something like that a genus is an assignment of

Welcome to PhysicsOverflow!
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Please help [promote](#) PhysicsOverflow if you like it.

News

The first phase of the reviews section; the submission/review page, is [completed!](#) See the [example submission-reviews](#).

Tools for paper authors

[Request Submission creation](#)
[Claim Paper Authorship](#)

Tools for SE users

The reviews section

The [Reviews section](#) is intended to facilitate open and efficient public peer reviewing of papers. It is meant to nicely complement and continue what [Paul Ginsparg](#) has already achieved by launching the [ArXiv](#).

The trouble with conventional journal peer-reviewing

- Paywalls
- Journal peer-reviewing is way to slow and inefficient
- “Sampling effect”: Only the editor + 2-3 referees judge the paper:
 - > [Good papers](#) can get wrongly **rejected** (Higgs’s paper, string theory in the 1970)
 - > [Nonsense](#) gets wrongly **accepted** and **globally hyped (!)** by popular media channels today

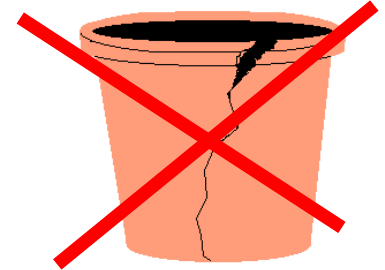
The idea of paper reviewing on PO

- Anybody may [submit](#) an ArXiv paper to PO
- Authors can [claim authorship](#) of their papers
- The author or anybody else may summarise the paper
- Anybody can vote on the [originality](#) and [accuracy](#) of the paper (from these votes a [final score y](#) is calculated)

$$y = A \exp \left(\sqrt[3]{\frac{O}{5}} \right)$$

- Anybody can (partially) review the paper and further discussions can take place in comments

Criteria to accept a paper for reviewing on PhysicsOverflow



In principle, anybody can submit a paper to get a review and discussion, but we do not accept every nonsense ...

„New Einsteins“, „Surfer-dudes“, „Biker-dudes“, etc who want to overthrow established physics have to back up their claims by solid theoretical and/or experimental arguments !

How a submission looks like

The screenshot shows a submission on PhysicsOverflow titled "Field Theory Without Feynman Diagrams: One-Loop Effective Actions". The page includes a search bar, navigation links (Recent QA, Questions, Unanswered, Import post from SE), and a sidebar with "Featured!" and "Welcome to PhysicsOverflow!".

Annotations:

- Originality:** Indicated by a blue circle around the "Originality" section, which shows a score of +1 (green up arrow) and -0 (blue down arrow).
- Accuracy:** Indicated by a blue circle around the "Accuracy" section, which shows a score of +1 (green up arrow) and -0 (blue down arrow).
- Total score:** Indicated by a green circle around the total score of 1.79, with a green arrow pointing to it.
- Add authors:** Indicated by an orange circle around the "add author" button, with an orange arrow pointing to it.

Submission Details:

- Title:** Field Theory Without Feynman Diagrams: One-Loop Effective Actions
- Views:** 2 views
- Referee this paper:** [hep-ph:9205205](#)
- Text:** Please use comments to point to previous work in this direction, and answers to referee the accuracy of the paper. Feel free to edit this submission to summarise the paper (just click on edit, your summary will then appear under (Is this your paper?))
- Equation:**
$$y = A \exp \left(\sqrt[3]{\frac{O}{5}} \right)$$
- Abstract:** Traditional perturbative techniques at first-quantized particle formalism in cc first-quantized point-particle versions.
- Category:** hep-ph
- Submitted:** May 5, 1992 to [hep-ph](#) by (no author assigned yet)
- Edited:** 20 minutes ago by Ron Maimon
- Buttons:** edit, flag, close, hide, comment, delete, suggest edits, vote to close
- Your Review:** Please use reviews only to (at least partly) review submissions. To comment, discuss, or ask for clarification, leave a comment instead.

Right Sidebar:

- Welcome to PhysicsOverflow!** PhysicsOverflow comprises of a discussion forum for Physics at a graduate-level and beyond, and a section for [research paper refereeing \(reviews\)](#). The Q&A is up and running, and the reviews section is in its first phase (see [Tools for Paper Authors](#) below). Please read the [FAQ](#).
- Please help promote** PhysicsOverflow if you like it.
- News**
- The first phase of the reviews section; the submission/review page, is completed!** See the [example submission-reviews](#).
- Tools for paper authors**
- [Request Submission creation](#)
- [Claim Paper Authorship](#)

Example: a Negative Review

The screenshot shows a PhysicsOverflow page for the paper "Infrared Gluon and Ghost Propagators". The page has a score of -6.27, which is circled in red. The review section shows one review by "Frasca" with a score of +3 (upvote) and -0 (downvote). The review text is: "This paper is jaw-dropping opportunism and u... Let's start with some opportunism: Frasca does not need to wait for others to cite his papers. When he writes a new paper, he makes a new version of older papers with *forward references*! It's good that among his many discoveries, Frasca has invented a time machine, for this alone, +1 originality from me. On to the self-delusion."

Originality Referee this paper: [arXiv:0709.2042]

Accuracy (Is this your paper?)

Score -6.27

Submitted Oct 27, 2008 to Reviews I by (no author assigned yet) add author

1 Review

+3 -0

This paper is jaw-dropping opportunism and u... Let's start with some opportunism: Frasca does not need to wait for others to cite his papers. When he writes a new paper, he makes a new version of older papers with *forward references*! It's good that among his many discoveries, Frasca has invented a time machine, for this alone, +1 originality from me. On to the self-delusion.

Tools for SE users

Paper wants to derive the form of the IR gluon propagator from a mapping between the scalar ϕ^4 -theory and quantum Yang-Mills Theory

- Relationship between the Lagrangian and the EOMs neglected
- Idea is rather original

Example: a Positive Review

Renormalization Group Analysis of Turbulent Hydrodynamics

327 views

Originality Referee this paper: [arXiv:1012.0461](#)

+4
-0

Accuracy (Is this your paper?)

+3
-0

Score

7.59

Turbulent hydrodynamics is characterised by universal scaling properties of its structure functions. The basic framework for investigations of these functions has been set by Kolmogorov in 1941. His predictions for the scaling exponents, however, deviate from the numbers found in experiments and numerical simulations. It is a challenge for theoretical physics to derive these deviations on the basis of the Navier-Stokes equations. The renormalisation group is believed to be a very promising tool to address this problem. The paper presents a new method to apply the ERG to hydrodynamic turbulence and shows numerical results for simplified test cases. This has not been done before -> original. Accurate mathematical foundation of the method -> accurate.

condensed-matter

submitted Dec 6

retagged Jul 6

edit flag close hide comment delete suggest edits vote to close

1 Review

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Tools for SE users

Outlook

- β -state -> Full site with Reviews II and [beta feature-requests](#) fulfilled
- We need a second system developer!
- We are also interested in help other (in particular scientific) online communities to get started by lending our software and some (initial) support
-> (technical) collaborations ?
An example is the idea of a [PhysicsUnderflow](#) for up to undergrad-level physics

Appendix

Community moderation by review threads (by Mathematics SE)

Accessible to > 500 rep users:

1. List in the [answers](#) things you would like to close, reopen, undelete, delete, etc
2. People can comment and [vote](#) on these answers
3. If an answer has [3 net close, reopen, undelete, delete votes](#), a moderator or administrator executes the corresponding action.

Permissions and Privileges

- **Everyone:** ask, answer, comment, suggest edits
- **Registered Users:** search users, view edit history of posts
- **Registered & Email-Confirmed:** flag posts, post on user walls
- **15 Points:** vote on comments
- **25 Points:** vote on questions
- **50 Points:** vote on answers
- **500 points:** community moderation, edit directly
- **Experts and Editors:** close, reopen, and more
- **Moderators:** (un)block users, view voters and flaggers, ect
- **Administrators, Superadministrator:**
- **System Developer:** God (joking) ... :-)

Differences between the SE and PO user interface

- Hierarchical system of **categories** in addition to tags
- Comments **up-** and **downvotable**
- Positive and negative votes displayed for everybody
- Magnitude of downvote rep changes same as changes by upvotes
- Users who contribute negatively can have **negative rep**
- No accepting of answers
- **No autodeletion** of content
- Practically infinite comment length
- @User pings always and everywhere
- Vote reversal always possible
- No rep / vote caps
- Real private (unmoderated, Big-Brother excluded) **communication between users** possible.



History of PhysicsOverflow?

- **2013** a group of people decided that a physics analogue of MathOverflow for graduate-level and above is needed
 - **2013-09-10** Blog for systematic discussions created
 - **2014-02-20** - Technical Private Beta of PhysicsOverflow begins
 - **2014-04-04** - Public beta begins
 - **2014-08-24** - The hierarchial tag system released; leading to the phase *Reviews II*. The PhysicsOverflow software development has now branched away significantly far from the Question2Answer software development.
- Currently, the **PhysicsOverflow team** consists of 1 great system developer and 4 moderators/administrators

SE company mission

High-level academic community

- **Mission:** Support the international community of professionals and students in doing and learning science
- **Quality** of the content counts
- Content useful for a closed **specialised community**
- Focused on the **community** and the high-level content
- Good long-term expert users are important and highly appreciated
- Attracting the exactly right audience including known „real-world“ **experts** is important
- **Self-governement** of the community is of paramount importance



Academic community

Stack Exchange Company

- **Mission:** get a clean library of Q&A useful for Googlers written by volunteering contributors
- **Quantity and mass visibility**
- Content useful for for an as large as possible **general audience**
- Only the library of Q&As useful for **external Googlers** counts
- Each single user is equally unimportant and exchangeable
- Stack Exchange does not care about who the users are
- Strictly prescribed **network wide rules**, policies, and guidelines

The joys of living outside the SE network

- No need to fulfill externally prescribed activity and mass visibility criteria (compare [Area 51 statistics](#))
- No externally prescribed guidelines, rules, policies, etc ...
- No interventions into the (daily) moderation business of the community from outer space (no external Overlords)
- No rejection of useful and feasible feature requests for dubious external to the community reasons
- No closing of questions for non-physics reasons and/or against the will of the community

In Summary: What the PO community likes and appreciates is a good thing and allowed!

