

Ethics in Physics

Awareness, Cases, and Recommendations

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Outline

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2. Community Response
3. Defining Ethics Violations
4. Ethics Across Disciplines
5. Harassment Issues
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Case Studies

Two major frauds shattered trust in physics ethics

- Victor Ninov: **False discovery** of new elements
- Jan Hendrik Schön: **Fabricated data** at Bell Labs
- **Ethics in physics cannot be assumed**

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Community Response

APS Panel on Public Affairs investigates

- Task force on ethics education
- Surveyed early-career physicists
- Found widespread misconduct, little training
- Ethics often learned informally

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2020 survey: Some gains, gaps remain

- More awareness than in 2003
- Many still report misconduct
- Training often still ineffective

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Defining Ethics Violations

What Is Misconduct?

OSTP definition includes:

- **Fabrication:** Inventing data/results
- **Falsification:** Manipulating or omitting data
- **Plagiarism:** Using others' work without credit

Criteria:

- Major departure from norms
- Intentional, knowing, or reckless
- Proven by preponderance of evidence

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Ethics Across Disciplines

Physical sciences *not* immune to misconduct

- Lower frequency than bio/med/soc
- Similar patterns and types
- Misconduct crosses disciplines

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Harassment Issues

APS 2020 survey findings

- Women 5x more likely to be mistreated
- 15% report unwanted contact
- Some reports of rape by coworkers
- Gender minorities reported intermediate rates

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Principles and Guidelines

Guidelines rest on two pillars:

- **Tell the truth:** no fabrication, falsification, plagiarism
- **Treat people well:** fairness, respect, no abuse

Professional integrity reflects on the whole field

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Recommendations

Recommendations (1/2)

- Develop relevant and engaging ethics materials
- Promote respectful behavior in physics
- Assess beyond journal impact/h-index

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Recommendations (2/2)

- Highlight accountability and revocation of honors
- Reduce adviser dominance with oversight committees
- Collaborate with other science societies

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Conclusion

Ethical physics depends on culture, education, action

- Ethics is **professional**, not just personal
- Physicists shape the field's **credibility**
- **Uphold high standards together**

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References

References

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Thank you!

Questions or comments?