Adrienne Traxler – Current projects

# Professional networks of women and LGBT+ physicists

Science careers are not just a matter of technical skill and hard work, but are embedded in networks of social connections that confer affective and instrumental support. Workplace studies have highlighted constraints and barriers to these networks for women and LGBT+ persons in physics. Members of these groups are at greater risk of discrimination or harassment, and may have less access to useful connections or resources. However, key network analysis findings are decades old (for women) or have not been established (for LGBT+ scientists).

This project is using qualitative interviews and ego network analysis to map the professional support networks of PhD physicists. We wish to expand on recent climate survey findings and highlight workforce sectors or job situations where professional societies might offer interventions or support.

## Example research questions

* How are the professional support networks of women and LGBT+ physicists characterized in terms of size and density, type and multiplexity of ties, and overlapping communities vs. fragmentation?
* What similarities and differences exist when comparing between academia, industry, and government job sectors?

## Example publications

(None, data collection is just starting!)

# Characterizing active learning environments in physics

Decades of research have strongly argued for the effectiveness of active learning compared to passive information-transfer instruction. However, “active learning” and similar terms cover a wide range of classroom activities. The vocabulary to discuss the differences between pedagogies is still developing. This project uses network and classroom observation data to characterize similarities and differences between several research-based university physics curricula. In developing more systematic ways to describe these learning environments, we hope to empower instructors to choose teaching methods suited to their learning goals and local contexts.

## Example research questions

* How do classroom observation and student network metrics distinguish diﬀerent active learning pedagogies in physics?
* To what extent are the observation profiles identiﬁed through Latent Proﬁle Analysis a replicable feature of a pedagogy?
* To what extent are network features associated with distinct observation profiles?

## Example publications

Commeford, K., Brewe, E., & Traxler, A. (2022). Characterizing active learning environments in physics using latent profile analysis. *Physical Review Physics Education Research*, *18*(1), 010113. <https://doi.org/10.1103/PhysRevPhysEducRes.18.010113>

Commeford, K., Brewe, E., & Traxler, A. (2021). Characterizing active learning environments in physics using network analysis and classroom observations. *Physical Review Physics Education Research*, *17*(2), 020136. <https://doi.org/10.1103/PhysRevPhysEducRes.17.020136>

Traxler, A. L., Suda, T., Brewe, E., & Commeford, K. (2020). Network positions in active learning environments in physics. *Physical Review Physics Education Research*, *16*(2), 020129. <https://doi.org/10.1103/PhysRevPhysEducRes.16.020129>