Final project (Due Date: May 13\textsuperscript{th})

• You will analyze an optoelectronic device(s) of your choice.
  – You do not need to invent a new device.
  – You can analyze device published in literature and extend, elaborate, or improve upon the published result.
  – You are encouraged to choose a topic outside of your research field but this is not required.

• Final project is 25% of your final grade in this course.
Final project requirements

• Your project must incorporate Lumerical simulation.
• 3-4 page paper in the format of a journal article on a topic of your choosing (Optica template)
  – You must include all of the normal sections in a journal paper: Introduction, Methods, Analysis, Discussion, Conclusion, References, etc.
• E-mail your paper and Lumerical simulation files / code to Kevin Cook (kevin.cook@berkeley.edu).
Previous final project titles

- Directional emission in microdisk lasers
- Analysis of a GeSn laser on a Ge virtual substrate
- Simulation study of GeSn Direct-bandgap laser grown on Si
- Review and simulation of visible wavelength microdisk lasers
- Strained germanium electro-absorption modulator
- Junction design for a Mach-Zehnder Interferometer
- Analysis of a high-contrast grating VCSEL

- Sample project reports are posted on bCourses.
## Grading rubric

<table>
<thead>
<tr>
<th>Technical analysis</th>
<th>No obvious technical errors. Approach to analysis is adequately justified. Correct usage of Lumerical.</th>
<th>Minor technical error or oversimplification in analysis or Lumerical. Some equations used without justification</th>
<th>Major technical errors or completely unjustified usage of equations. Fundamental issues with usage of Lumerical</th>
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<tr>
<td>Degree of Difficulty</td>
<td>Thorough analysis of difficult topic. Beyond first-order analysis and in-depth explanation and understanding of key results.</td>
<td>Somewhat simplified first order analysis of difficult problem. Limitations of analysis are understood and explained.</td>
<td>Simple analysis (e.g. simple waveguide component). No attempt to go into adequate detail to adequately analyze problem.</td>
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<tr>
<td>Technical presentation</td>
<td>Clear concise writing. Figures are legible, not too big or not too small. Correct report format was used. Good introduction with motivation behind work. Correct paper length</td>
<td>Some grammatical errors; or confusing presentation. OK introduction and motivation. Some issues with paper format (fuzzy or poorly sized images, paper a little short, etc.)</td>
<td>Many grammatical errors. Confusing presentation. Poor introduction or motivation. Paper too short. Figures are poorly sized or formatted.</td>
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| POINTS | 25 | 15 | 5 |

**TOTAL POINTS = 75**