Beamer Class Demonstration

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MATH 198: Math Forum
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Overview

1. Beamer Features
   - Structural Features
   - Other Features
   - Examples
2. Examples from Atlanta Presentation
   - Representation Theory of S_n
   - Construction of Factorization

Structural Features

Levels of Structure

- usual LaTeX \section, \subsection commands
- 'frame' environments provide slides
- 'block' environments divide slides into logical sections
- 'columns' environments divide slides vertically (example later)
- overlays (à la prosper) change content of slides dynamically

Example (Overlay Alerts)

On the first overlay, this text is highlighted (or *alerted*).
On the second, this text is.

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Other Features

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- Clean, extensively customizable visual style
- No weird scaling like prosper
  - slides are 96 mm $\times$ 128 mm
  - text is 10-12pt on slide
  - slide itself magnified with Adobe Reader/xpdf/gv to fill screen
- pgf graphics framework easy to use
- include external JPEG/PNG/PDF figures
- output directly to pdf: no PostScript hurdles
- detailed User's Manual (with good presentation advice, too)

Equations, Equations, Equations!

One classy equation:

$$|G| = |Z(G)| + \sum_{i=1}^{r} |G : C_G(g_i)|$$

whole group G

Another equation (Cauchy Derivative Formulas):

$$f^{(n)}(z) = \frac{n!}{2\pi i} \int_\Gamma \frac{f(\zeta)}{(\zeta - z)^{n+1}}\, d\zeta, \qquad (n = 1, 2, 3, \dots)$$

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center of G

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size of ith conj. class

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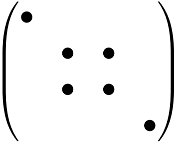
Pictures (with graphicx)

Exhibit A: Molinder-zilla

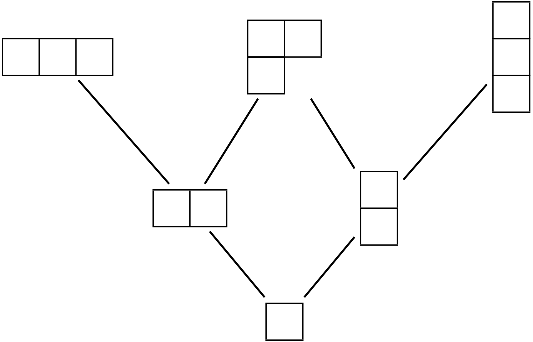
Exhibit B: Tokyo

Bratteli Diagram for $1 < S_2 < S_3$

Graded diagram of proper partitions for $1 < S_2 < \cdots < S_n$

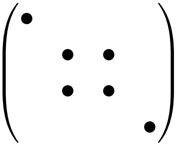


$\mathbb{C}S_3$



Bratteli Diagram for $1 < S_2 < S_3$

Each block for S_n restricts to a multiplicity-free direct sum of blocks for S_{n-1} by removing a box



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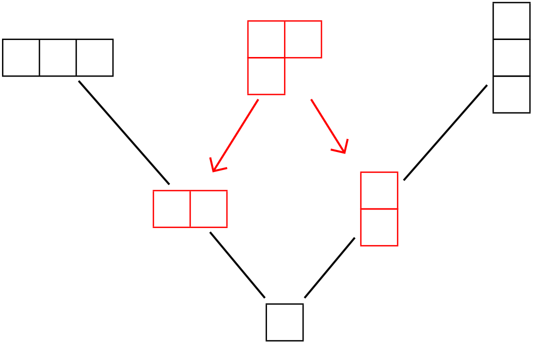
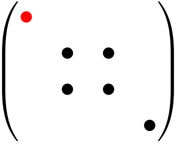


Bratteli Diagram for $1 < S_2 < S_3$

Each pathway through the diagram corresponds to a filled-in partition and a row/column in matrix



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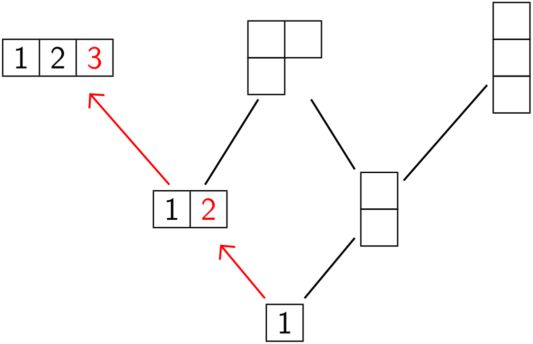

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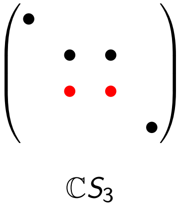

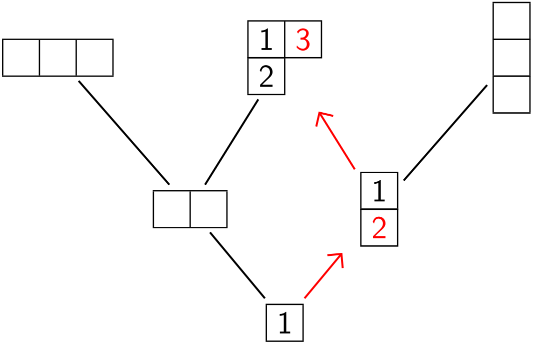

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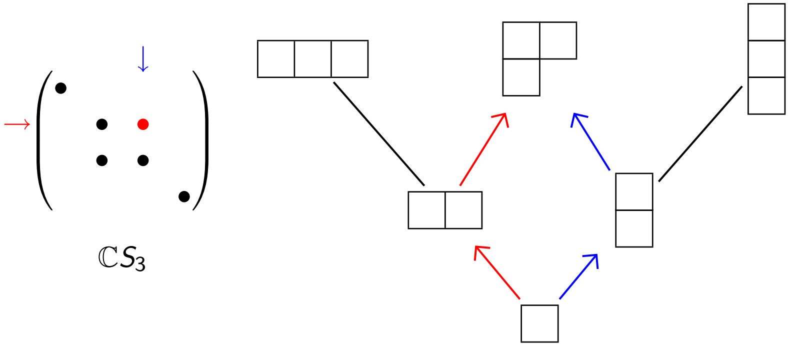
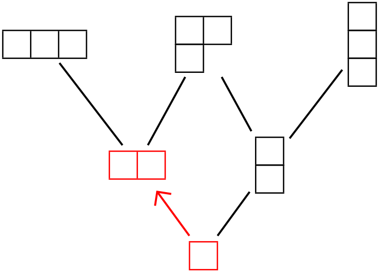
A pair of paths ending at same diagram specifies a 1-D Fourier space



Construction of Factorization

Stages of Subspace Projections

- Partial paths give $\mathbb{C}S_n$ subspaces
- At stage for S_k, project onto these subspaces
- Build sparse factor from projections
- Full paths by stage for S_n



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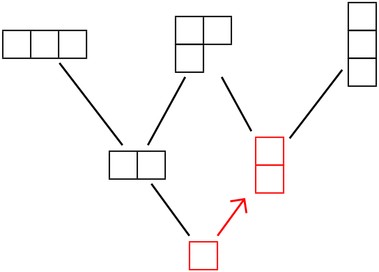

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References

On The Web

Senior thesis website: ⟨http://www.math.hmc.edu/∼emalm/thesis/⟩

Beamer Website

⟨https://sourceforge.net/projects/latex-beamer/⟩