Question session with Avron:

\[ T = e^{-t} \quad T \to 0. \]

\[ t \to \infty \quad \text{large vol. limit} \]

\[ T^2 = \frac{\mathbb{Z}}{2} \quad T \to \infty. \]

Degenerate ex. structures

\[ \begin{vmatrix} 1 & \ast \\ 0 & 2 \end{vmatrix} \]

Degenerate is nontrivial (i.e. \((T-I)^k \neq 0\)).

In case of true nontrivial group, this is a Dela trich.
\[ y^2 = (x^2 - 3)(x - 1) = E_z. \]

What's its modular parameter?

\[ \Delta = \frac{d \text{v}}{3} \text{ extends to a hol vol. form on } E_z. \]

\[ CP^1 \buildrel {1 \Delta} \over \longrightarrow \text{ on basis of } H_2. \]

Impossible to do explicitly, but can be done locally for \( \Omega \).

\[ \Omega : \gamma \to \gamma^2 \]

\[ \gamma = 0 \text{ is a } 1 - \epsilon 5 \text{ limit point.} \]

\[ \text{ Explicitly monotone.} \]

Exercise: if curve runs, surface gives double cover of \( CP^1 \), \( \delta \) sections.

two such pb. by half turn get \( \Delta \text{ of Dehn twist.} \)

\[ \text{ Monotone } = \text{ Dehn twist } / \gamma. \]

\[ E_0 = \{ Y^2 = x^2(x - 1) \} \sum_\gamma \]

action of Dehn twist \( (a, b) \)

Higher order \( A \)-no sheaves for \( \text{ grad } \).

\[ \text{ Graph}(h) = \gamma_n \text{ for } \gamma \text{ path.} \]

\[ \gamma \]
This $E^2$ has two copies:

\[ \begin{array}{c}
    P_1 \\
    \downarrow a_1 = a_2 \\
    x \\
\end{array} \]

boundary compact: legs go to $\infty$, or legs go to 0.
If we picture on left is 0, get this:

\[ \begin{array}{c}
    Q_1 + a_1 + P_2, \\
    \text{on some } \mathbb{R}^2 \text{ disc} \\
\end{array} \]

\[ \text{Can glue together} \]

\[ \text{Need each } Q_1, Q_2, \text{ to intersect only in one part, otherwise you're screwed.} \]

\[ \text{In general, build annuli, stay inside} \]

\[ \text{a mixture of loops and trees.} \]

\[ \not\exists \mathfrak{5} = 0 \]

\[ \text{equation, equation.} \]
For genus 2:

\[ \text{How would you build mirror of } \quad \begin{array}{c}
\text{\includegraphics{example.png}}
\end{array} \]

\[ \text{Obs: } C \subset \emptyset, \text{ so can't actually find } D. \text{ (should be } -2 \text{ pts, but no way to fill } C \text{ - finite points by codes).} \]

Then (Bondal, Orlov):

\[ \text{If } C \subset X, \text{ smooth } \implies \text{D}^b(X_C) = \langle \text{D}^b(X, D^b\text{Gm}(C)) \rangle \]

\[ \text{If } E \text{ P}^1 \text{ bundle are } \mathbb{C} \]

\[ \text{E} \]

\[ \text{i} \times \pi^* : \text{D}^b(c) \to \text{D}^b(\hat{X}_c). \]

Furuya cat. side - should be able to say something

\[ \quad \begin{array}{c}
\text{\includegraphics{example.png}}
\end{array} \]

\[ \text{C} \subset \mathbb{P}^1 \times \mathbb{P}^2 \]

\[ f_{2,3} = 0 \quad \text{is a genus 2 curve} \]

\[ X = \mathbb{P}^1 \times \mathbb{P}^1 \times \mathbb{P}^2 \quad \text{has effective } \text{anti-can divisor; toric Fan} \quad \text{= proper transform of toric divisor,} \]

[with Abramovich, Karthikov]

\[ \text{can build a Log tori fibration on } X \text{ with singularities.} \]

\[ \text{reduced spaces of } \text{sections are all } \mathbb{P}^1 \times \mathbb{P}^1 \text{'s.} \]

\[ \text{E} \]

\[ \text{finite of fixed } \text{points } \eta_{0-b} \rightarrow C. \]

\[ \text{analytic wall-crossings / yet could change - get more.} \]
For Batyrev, (-1) hypersurface a cone toric $B \xrightarrow{MS} \text{(-1) hypersurface in conic toric}$.  

$\mathbb{CP}^2$ 

$\mathbb{CP}^2 \overset{\pi}{\longrightarrow} \text{fiber of } W$ 

$\text{\textquotedblleft smooth cubic } \overset{\text{descend}}{\longrightarrow} \text{toric surface}$ 

then need to be careful of how we smooth (how much symp. area?).  

Batyrev: take fan of $\mathbb{CP}^2$  

look at its (aleph-1) hypersurface, cone dividing into toric.  

one singular, one punctured. 

Usually states for boundary. 

tropical picture of fibers $W = \frac{z_1 + \frac{e^4}{z_1}}{z_1 z_2} \quad -$ more, long side.  

tropical picture $\xrightarrow{\pi}$ toric degree.  

generality of $\mathbb{R}^2$ function for complement of smooth cubic $\sim$ we don't know.  

If you can get a family of $E_i / C$, 

simplifies to dual toric variety of Batyrev.
\[ \mathcal{L} = \mathcal{O}(k) \div 2.2. \]

Sections are where \( \phi \)

is polynm.

Invariants are given by the

of.

\[ \mathcal{Z}_{\mathcal{L}} \]

so \( \mathcal{Z} \) extends to a section of \( \mathcal{O}(1) \).

It vanishes to a point \( \mathcal{L} \in \mathcal{Z} \)

so that fiber at \( \infty \) is boundary \( \bigtriangleup \).

\[ \text{w}^{-1}(p) \subset (\mathbb{C}^*)^2 \]

hyperface \( \subset \mathcal{Y} \) toric

\[ \text{w}^{-1}(p) \text{ are hommer to boundary} \]

Smallest such toric variety is actually
dual of original toric guy.

3 orbifold singularities,

non-commutative defector:

\[ \text{wren of } \mathcal{E} \mathcal{P}^2 \] is \( (\mathbb{C}^*)^2 \).

degen \( \text{of } \alpha \) \( \rightarrow \) degen \& symplectic \( \mathcal{H}^2(\mathbb{C}^*)^2) = \mathbb{Z} \).

We see \( \mathcal{E} \mathcal{P}^2 \)

exact symplectic.

\[ \text{we used } \mathcal{E} \mathcal{P}^2 \text{ instead} \]

exact \( \alpha \)

\[ 0, \mathcal{O}(1), 0(2) \]

defo.

non-trivial
defin to non-exact w:

\[ L_0 \xrightarrow{2} L_1 \xrightarrow{3} L_2 \]

corresponds to a non-can. deformation.

non-can. alg. geom.

sheaves as modules / non-canon. version of algebra

Then you have a nice lemma of

(non-exact deformation) \xrightarrow{\text{defining}} \text{non-soft} \xrightarrow{\text{defining}}

related to generalized galois structure - special case.