

THE M-THEORY GEOMETRY

OF GENERALISED TORIC POLYGONS

STRINGS 2024 Gong Show - 4th June 2024

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Based on 2403.09776 with S. Franco & D. Rodríguez-Gómez

5d SCFTs FROM STRING THEORY

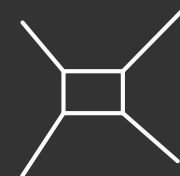
- M-theory geometric engineering
- Brane webs in type IIB
- Duality: M-th on T^2 \leftrightarrow IIB on S^1

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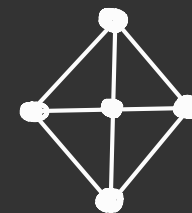


Toric case \rightarrow

Combinatorial data
"toric diagram"

Brane web

Toric geometry



- Brane manipulations in webs with 7-branes

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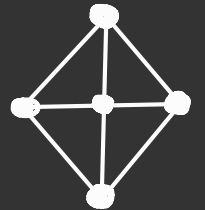
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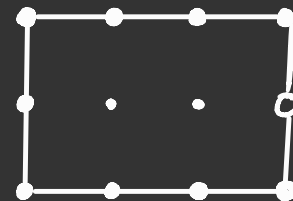


- Brane manipulations in webs with 7-branes

- Hanany-Witten moves

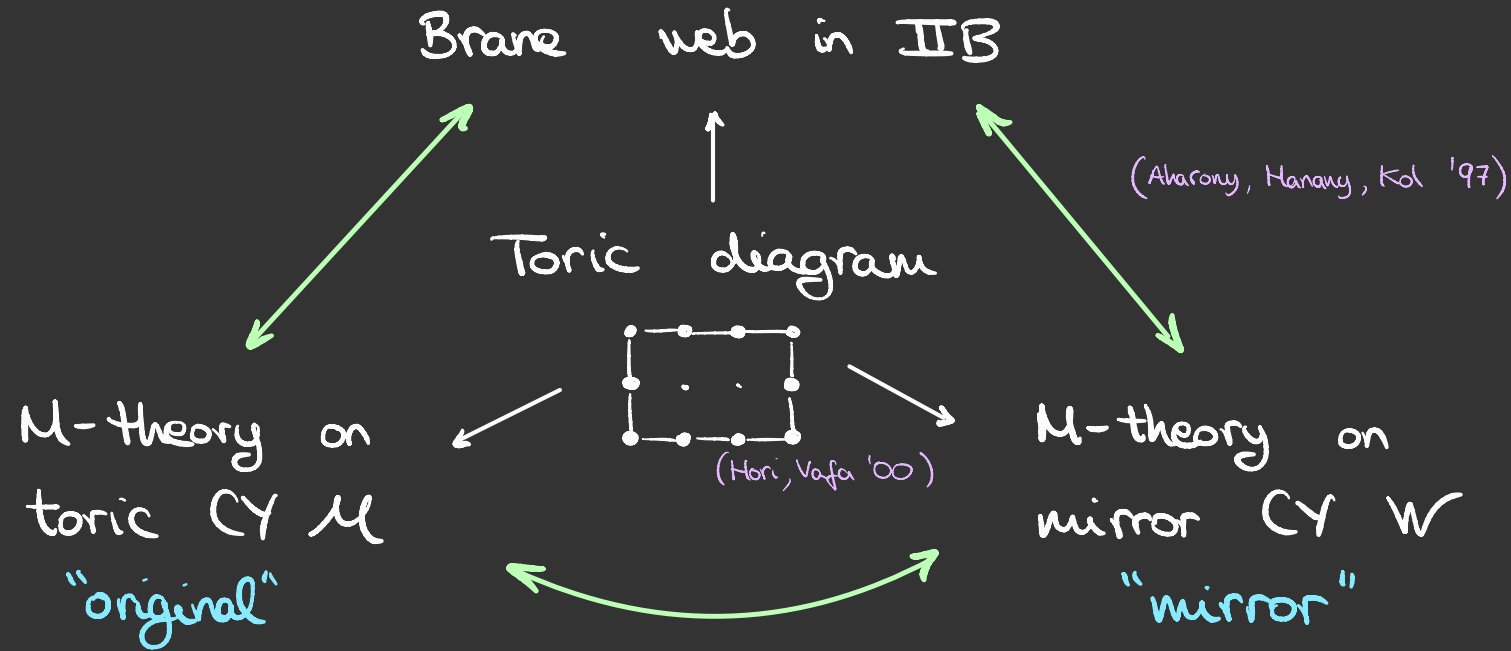
- Higgs branch flows

Generalised Toric Polygon

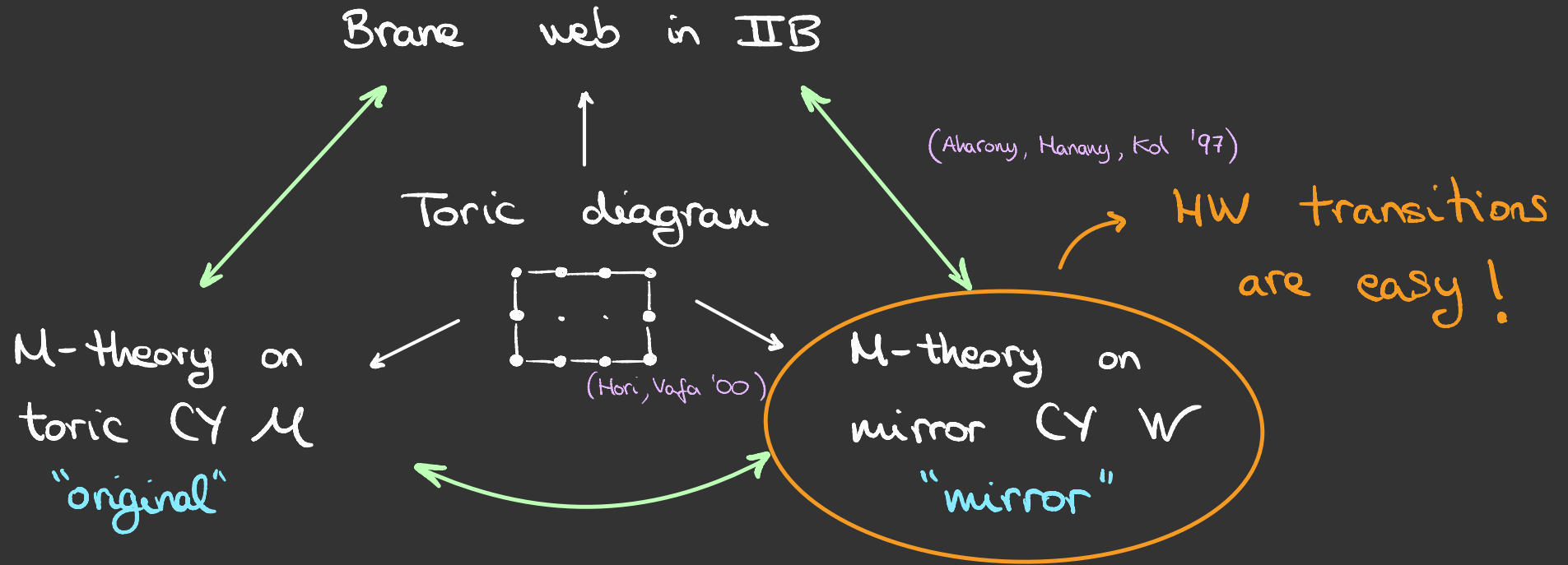


(Benini, Bonanuti, Tachikawa '09)

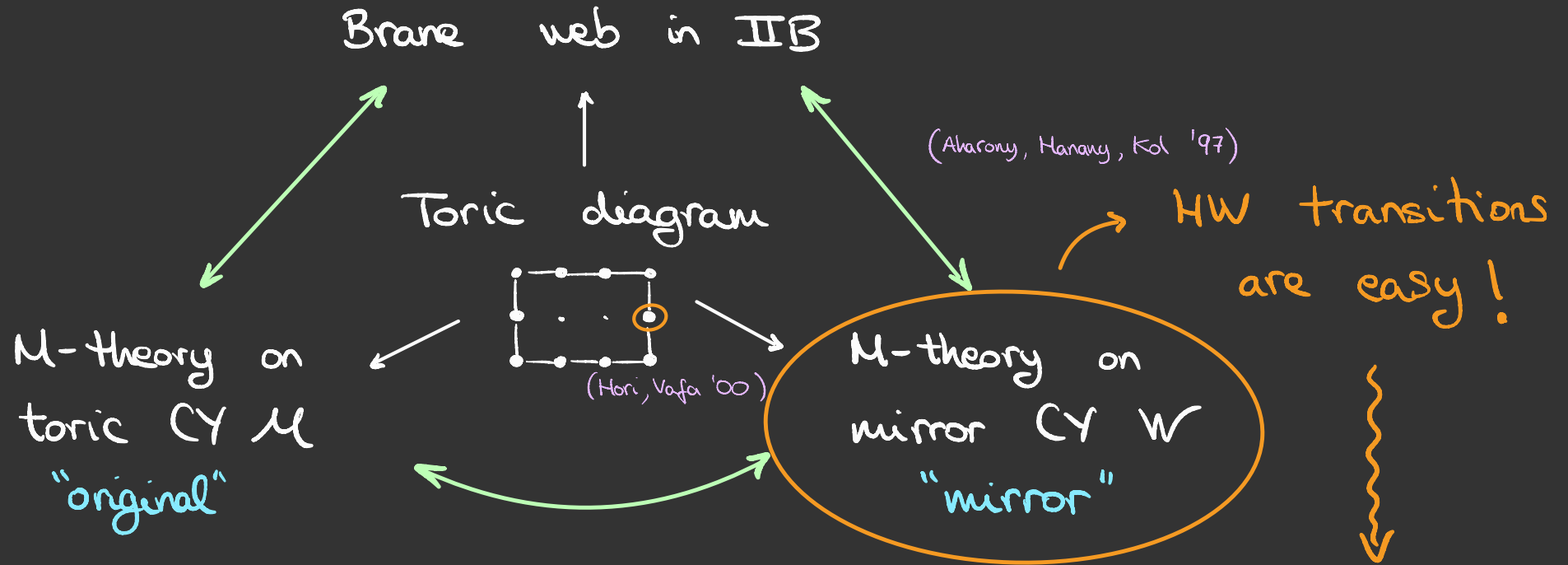
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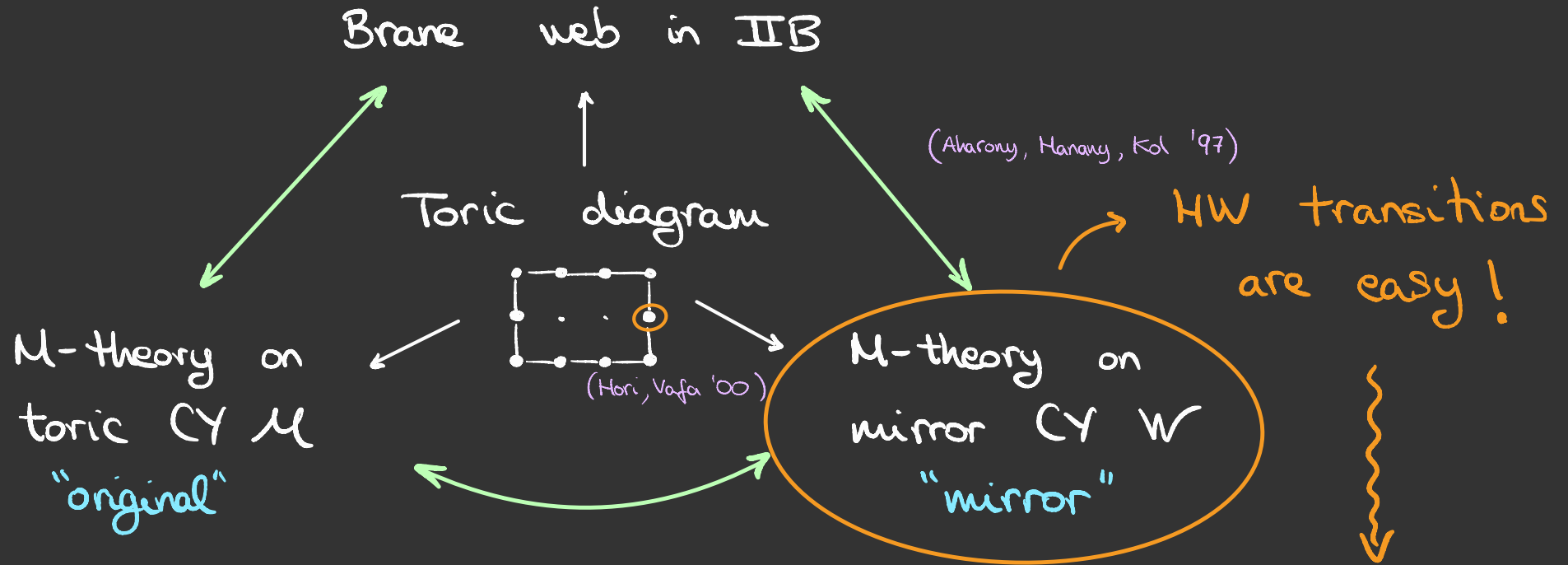


GENERAL IDEA



White dot = Constraint for complex structure moduli

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Constraint for Kähler moduli

(Borger, Collinucci, Schafer-Nameki '23)

White dot = Constraint for complex structure moduli

- Connection to mutations in math \rightarrow invariants

(Franco, Song '23; Cremonesi, Sa '23)

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- Conserved quantities under mutations

- Period $\pi(t) = \int \frac{dx dy}{xy} \frac{1}{1 - tP(x,y)}$ (Akhtar, Coates, Galkin, Kasprzyk, ... '12-'22)

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- BPS quivers for 5d theory on S^1

THANK YOU FOR

YOUR ATTENTION !

