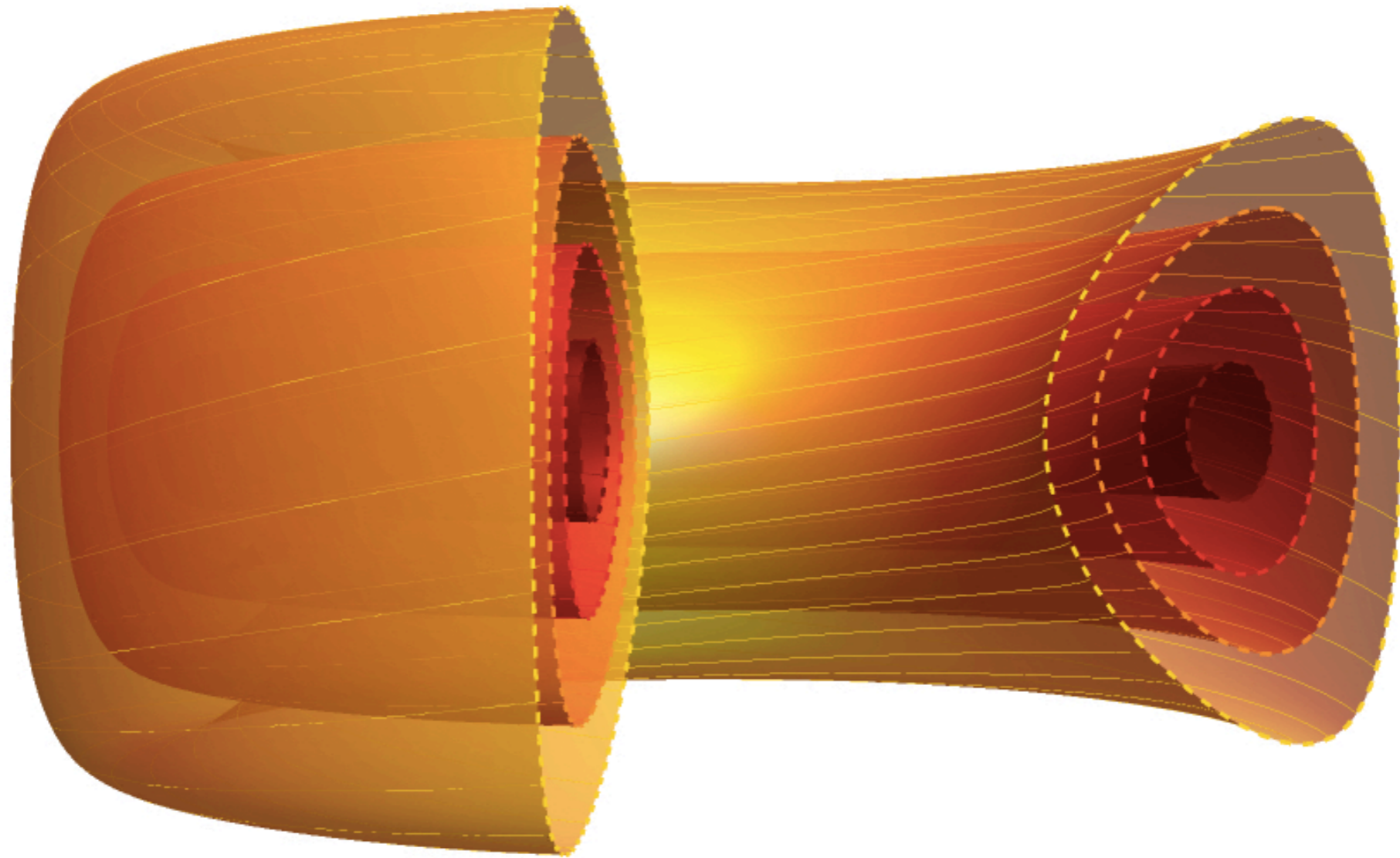


TSVV 2: Negative triangularity

March meeting



Justin Ball
22 March 2022

Agenda

- **General updates**
- Roundtable discussion with team members
- Comments, questions?

General updates

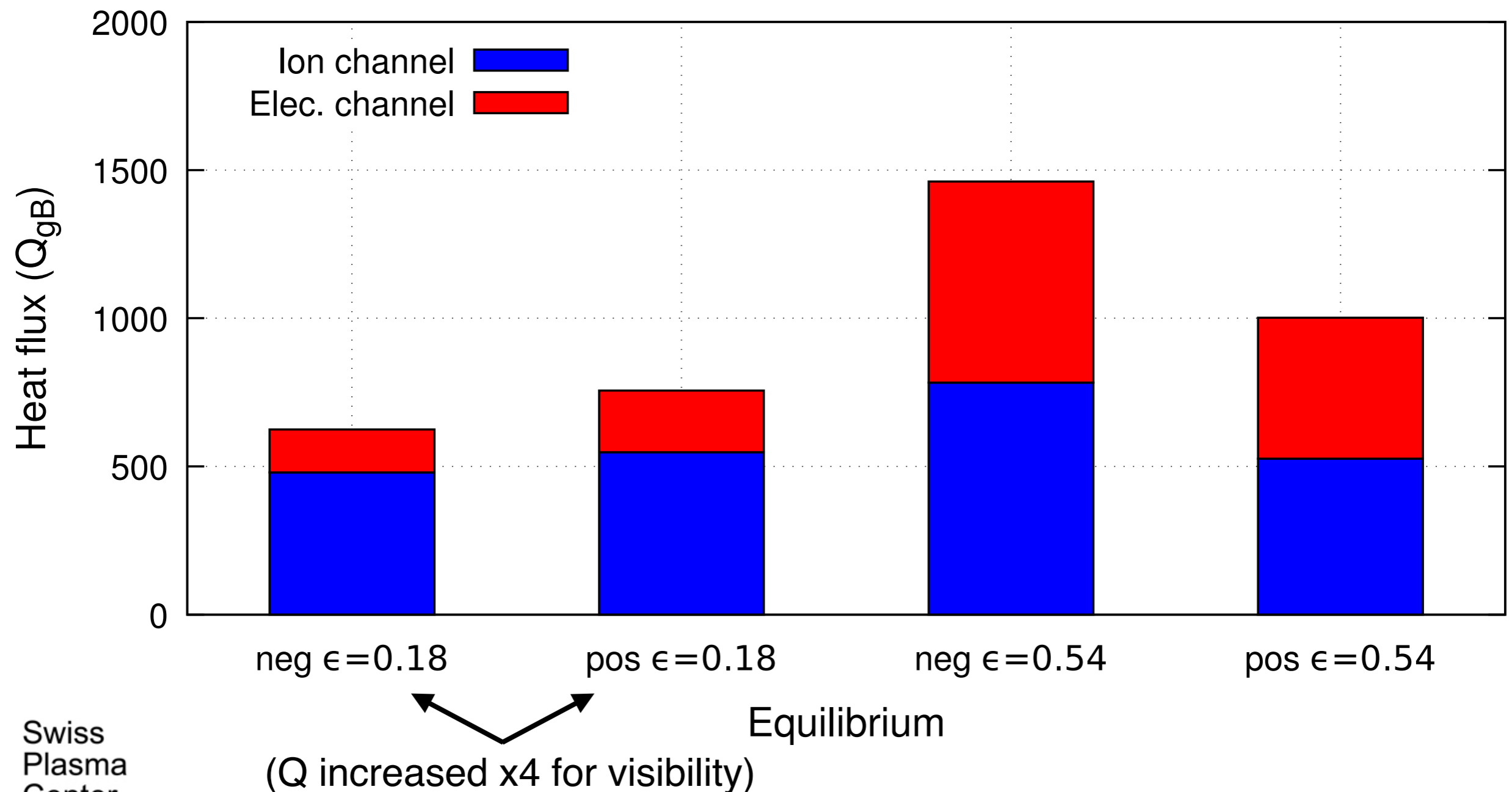
1. Scientific board meeting went well
2. Advanced Computing Hub request looks promising for Hinrich
3. Any requests for TSVV-funded travel? (1-2 people maximum)

Agenda

- General updates
- **Roundtable discussion with team members**
- Team meeting scheduling and resources
- Comments, questions?

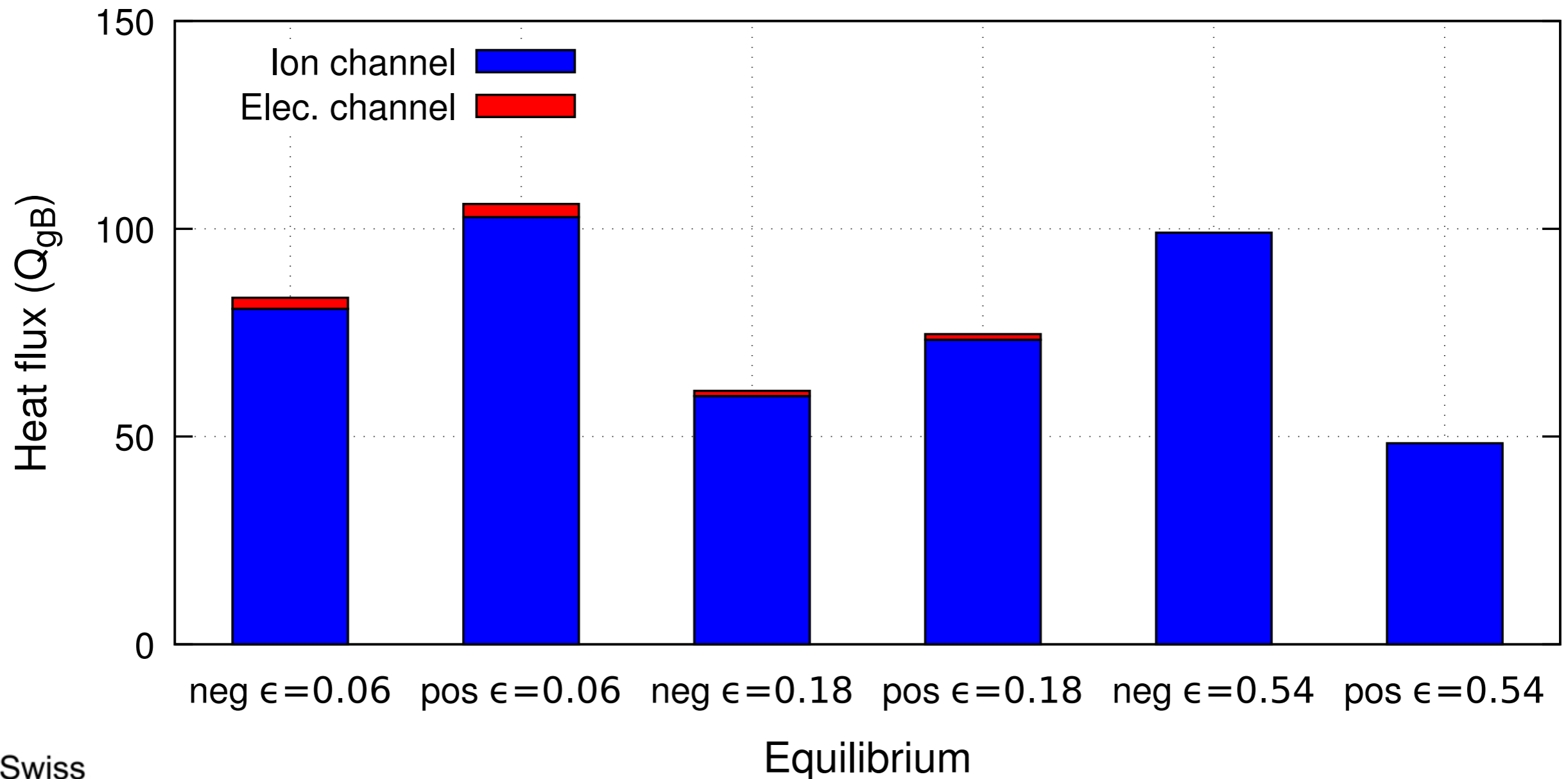
Cyclone Base Case parameters w/o collisions

- Unlike at standard aspect ratio, at tight aspect ratios negative triangularity appears to be destabilizing



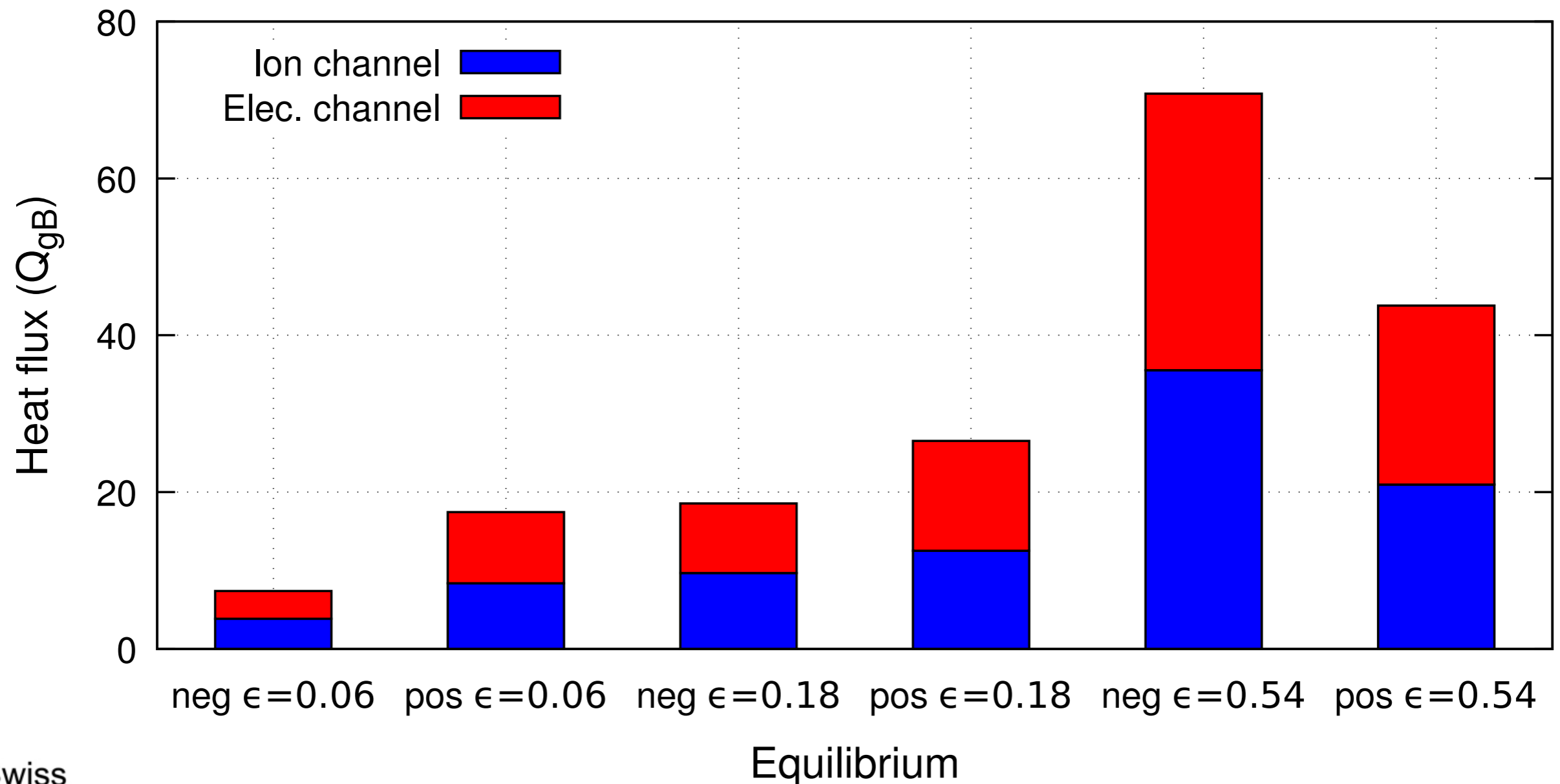
Pure ITG drive parameters w/o collisions

- Same trend is clearer for pure ITG drive: $\nabla T_e = \nabla n = 0$, while changing $R_0/L_{Ti} = \{10, 6.9, 4.3\}$ for $\epsilon = \{.06, .18, .54\}$ to keep Q approx. constant



Pure density gradient drive w/o collisions [bad res.]

- Same trend holds for pure TEM drive: $\nabla T_i = \nabla T_e = 0$, while changing $R_0/L_n = \{4.3, 3, 2\}$ for $\epsilon = \{.06, .18, .54\}$ to try to keep Q approx. constant



Agenda

- EUROfusion updates
- Roundtable discussion with team members
- **Comments, questions?**

All done.

TCV experimental equilibria

- Run some preliminary nonlinear simulations using comparison 3

Comp. Num.	Description	Constants of comparison	Discharge	Time (sec)	elong	delta	betaN	P_nbi (kW)	q95	Ip (kA)	<ne> (x10 ¹⁹ m ⁻³)	Comments
1	Diverted, PT	q95, betaN	69515	1.02	1.43	+0.29	0.97	636	3.17	242	4.0	not great q95 match
1	Diverted, NT	q95, betaN	69340	0.58	1.42	-0.28	0.97	362	2.94	218	3.3	with Langmuir probes
2	Diverted, PT	q95, ne, Pheat	69515	1.02	1.43	+0.29	0.97	636	3.17	242	4.0	not great q95 match
2	Diverted, NT	q95, ne, Pheat	69271	1.60	1.42	-0.27	1.59	612	2.90	217	4.4	-
3	Diverted, PT	Ip, betaN, ne	69508	1.49	1.43	+0.28	1.12	735	3.31	217	4.0	-
3	Diverted, NT	Ip, betaN, ne	69340	0.58	1.42	-0.28	0.97	362	2.94	218	3.3	with Langmuir probes
4	Limited, PT	Ip, betaN, ne	69511	1.50	1.34	+0.35	1.25	1030	3.38	228	3.4	-
4	Limited, NT	Ip, betaN, ne	69273	0.85	1.29	-0.29	1.30	475	2.85	228	3.4	-
5	Limited, PT	Ip, Pheat	69511	1.50	1.34	+0.35	1.25	1030	3.38	228	3.4	-
5	Limited, NT	Ip, Pheat	69273	1.70	1.26	-0.26	2.02	1020	2.79	226	4.6	-
-	Diverted, PT	-	69515	1.58	1.43	+0.34	1.84	1020	3.29	239	7.1	in H-mode; no CXRS so Ti=Te
-	Diverted, NT	-	69340	1.60	1.40	-0.27			2.92	217	5.4	with Langmuir probes