



HITS



UNIVERSITÄT
HEIDELBERG
ZUKUNFT
SEIT 1386

Stellar Modeling Continued

Project Practical

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Setup

Relaxed $5M_{\odot}$ AGB star, binary system with mass ratio $q = 0.25$.

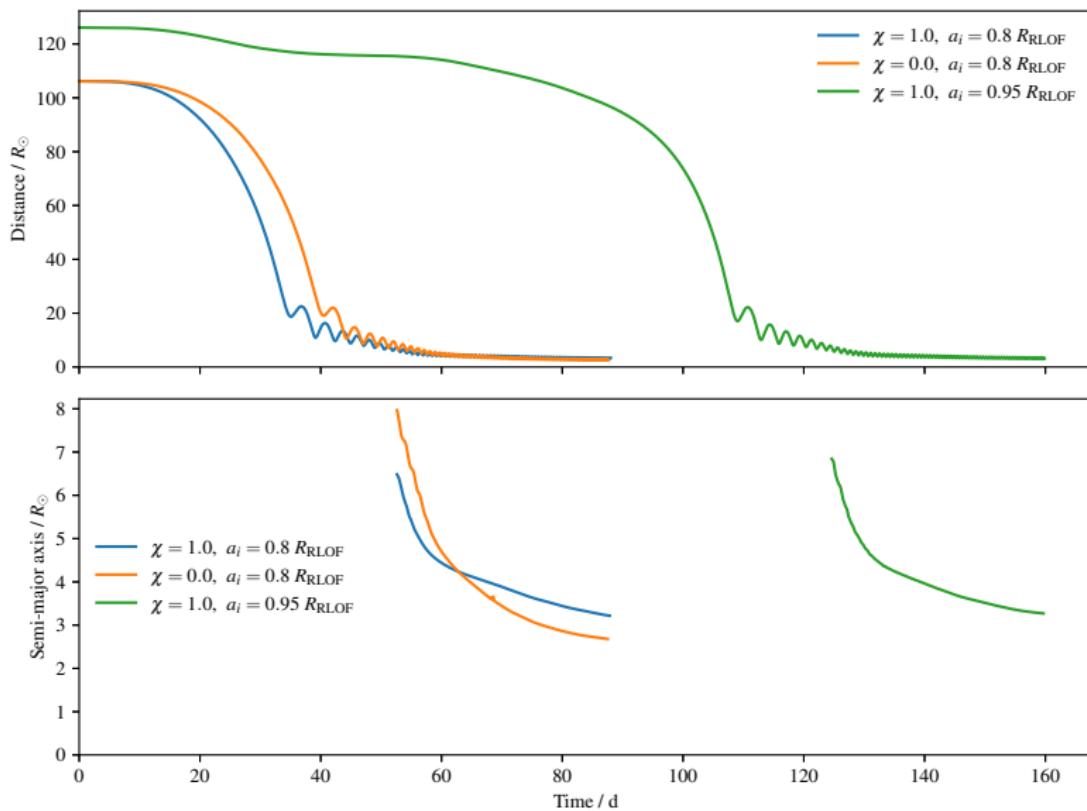
Three initial configurations:

1. Co-rotation $\chi = 1.0$, separation $a_i = 0.8 R_{\text{RLOF}}$
2. Co-rotation $\chi = 0.0$, separation $a_i = 0.8 R_{\text{RLOF}}$
3. Co-rotation $\chi = 1.0$, separation $a_i = 0.95 R_{\text{RLOF}}$

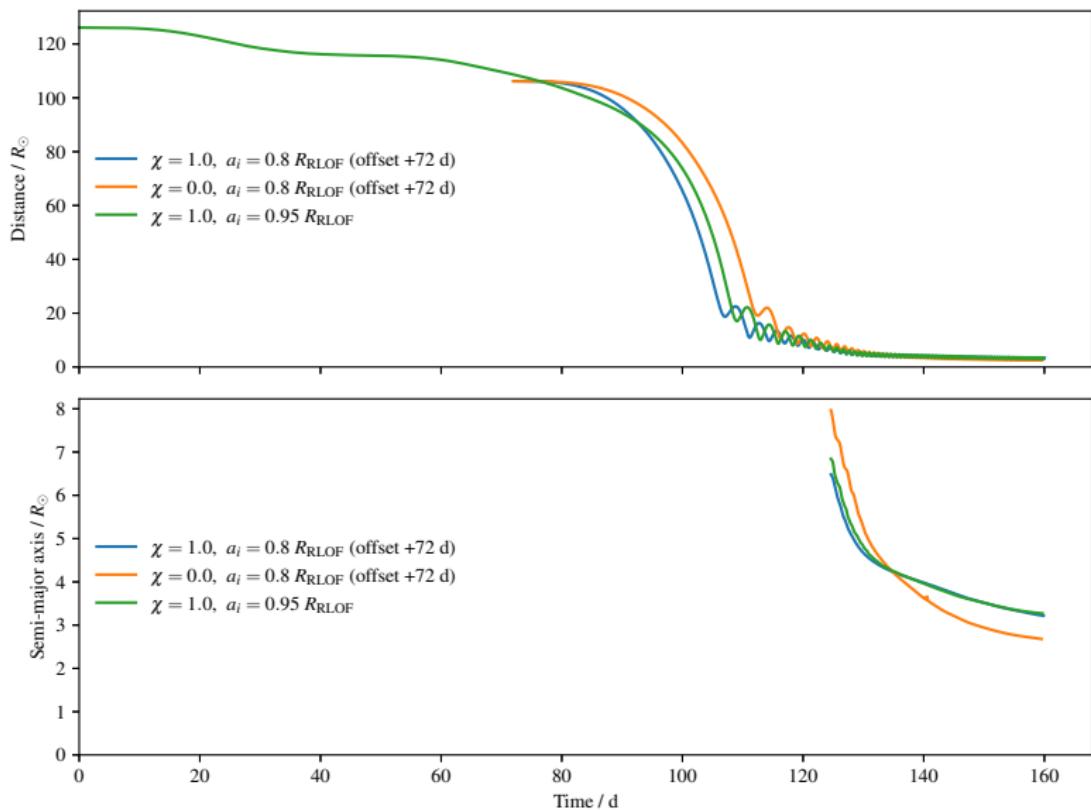
Table

χ	a_i/R_{RLOF}	a_i/R_\odot	a_f/R_\odot	a_f/a_i	$M_{\text{ej}}/M_{\text{tot}}$	$\left \frac{E_{\text{tot}} - E_{\text{tot},0}}{E_{\text{pot},0}} \right $
1.0	0.80	106.2	3.22	0.030	11.9 %	2.0 %
0.0	0.80	106.2	2.68	0.025	19.7 %	2.8 %
1.0	0.95	126.1	3.27	0.026	14.2 %	2.5 %

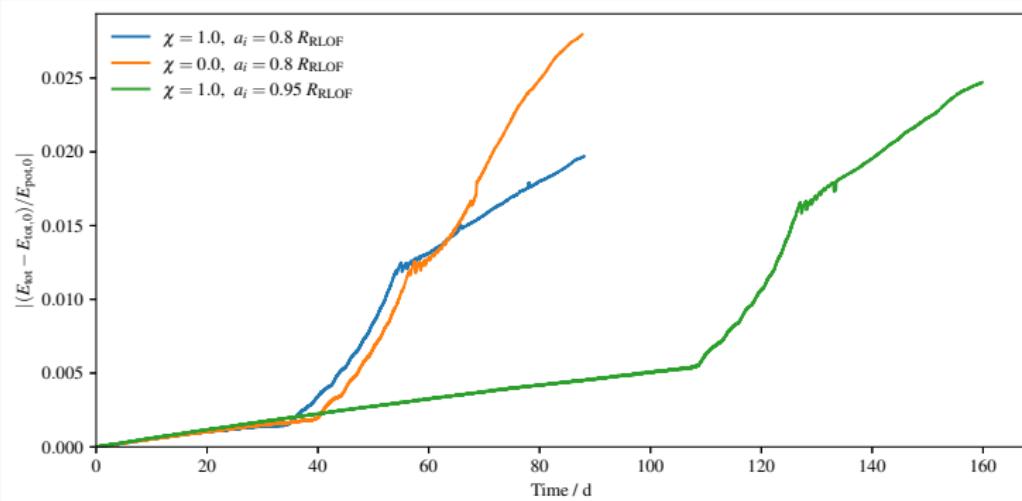
Distance + Semi-major axis



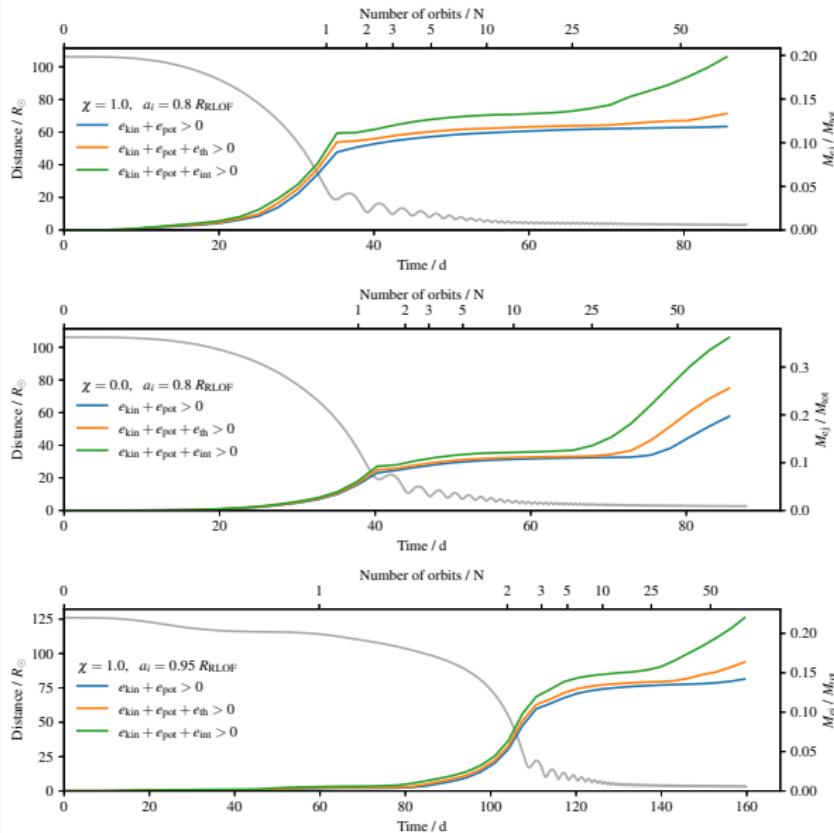
Distance + Semi-major axis (time-shifted)



Energy error

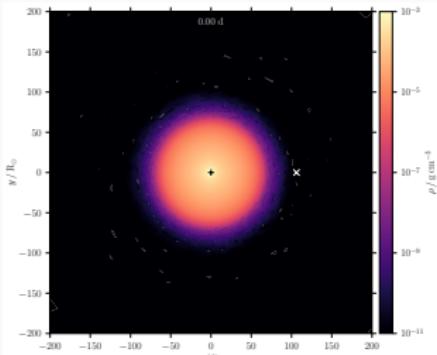


Unbound mass

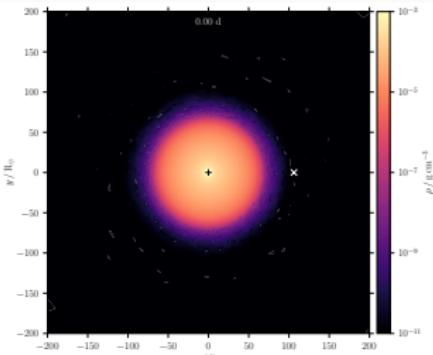


Slices, initial

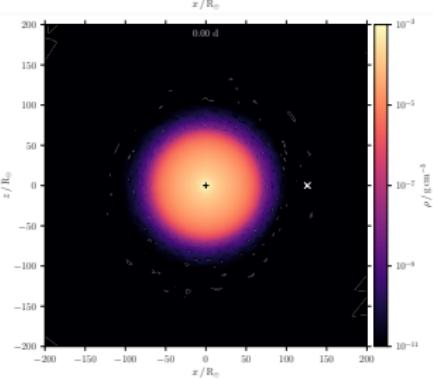
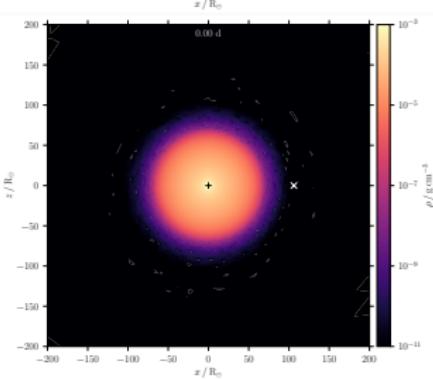
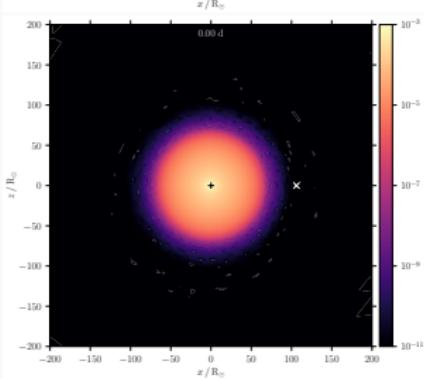
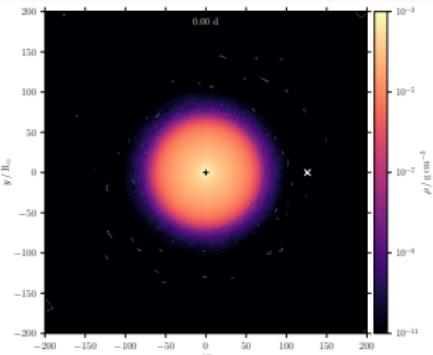
$\chi = 1.0, a_i/R_{\text{RLOF}} = 0.8$



$\chi = 0.0, a_i/R_{\text{RLOF}} = 0.8$

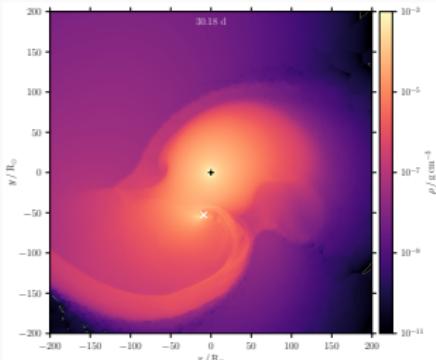


$\chi = 1.0, a_i/R_{\text{RLOF}} = 0.95$

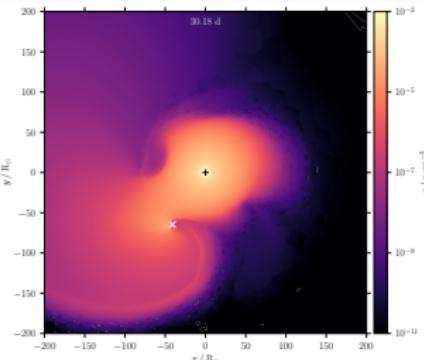


Slices, 1/3 of simulated time

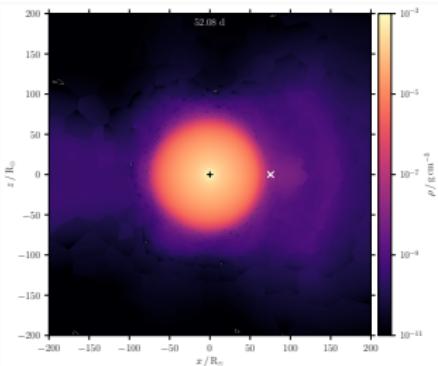
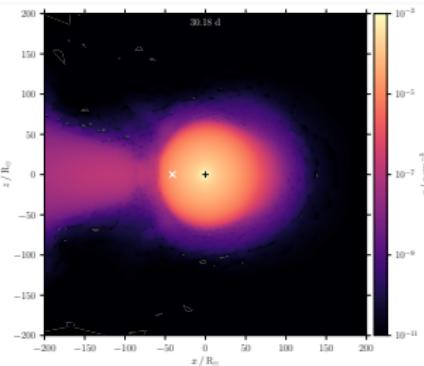
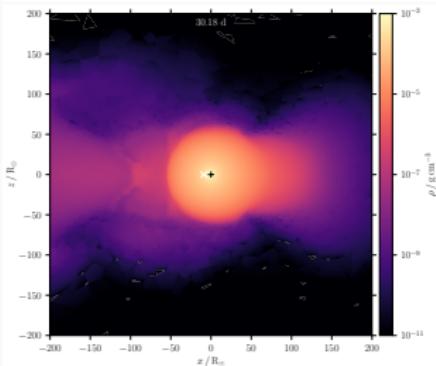
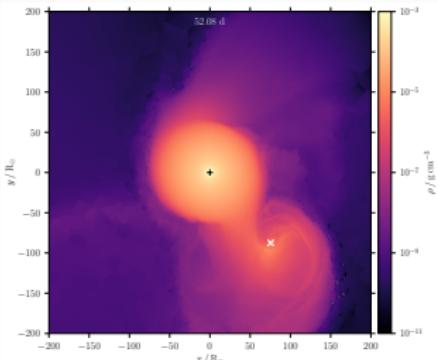
$\chi = 1.0, a_i/R_{\text{RLOF}} = 0.8$



$\chi = 0.0, a_i/R_{\text{RLOF}} = 0.8$

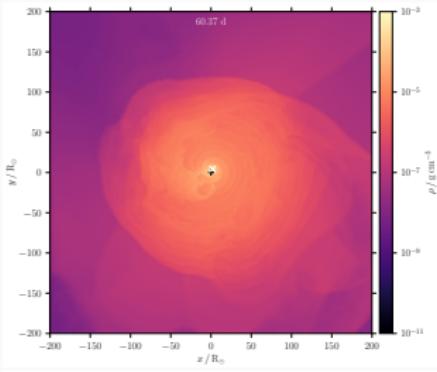


$\chi = 1.0, a_i/R_{\text{RLOF}} = 0.95$

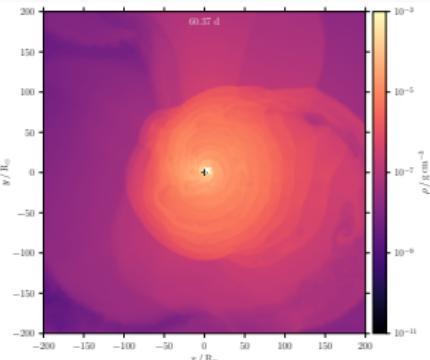


Slices, 2/3 of simulated time

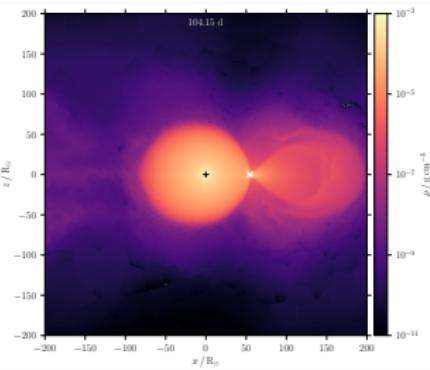
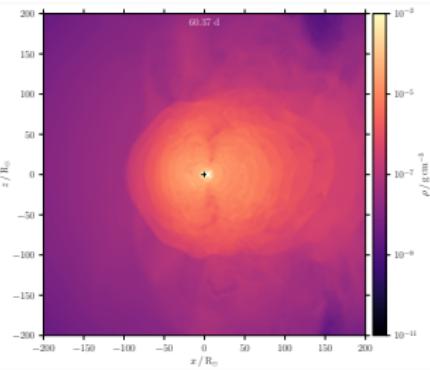
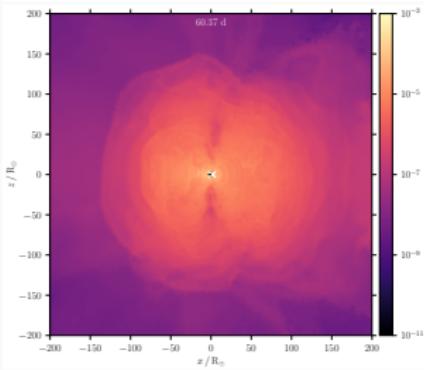
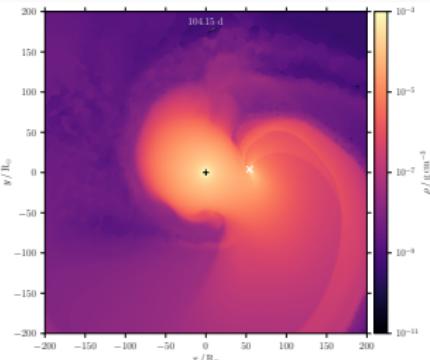
$\chi = 1.0, a_i/R_{\text{RLOF}} = 0.8$



$\chi = 0.0, a_i/R_{\text{RLOF}} = 0.8$

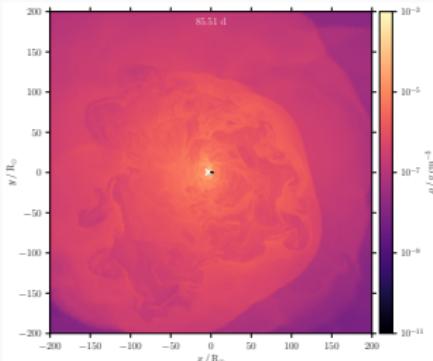


$\chi = 1.0, a_i/R_{\text{RLOF}} = 0.95$

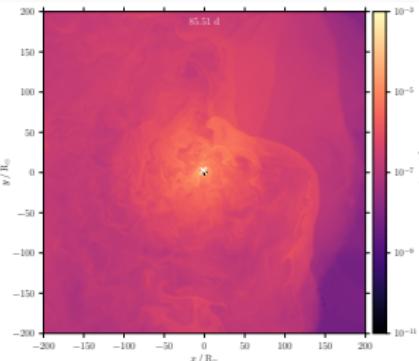


Slices, final

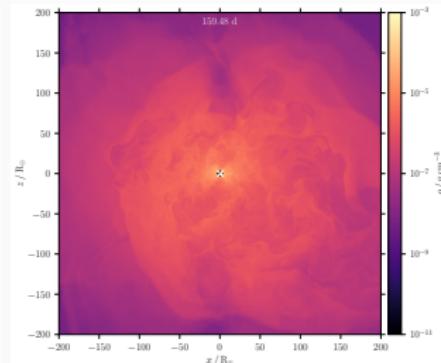
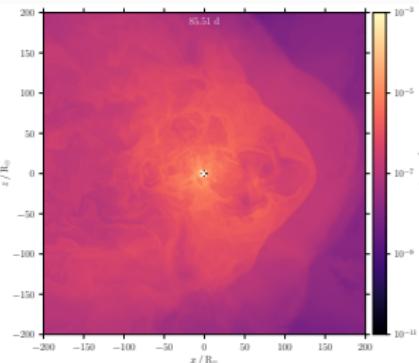
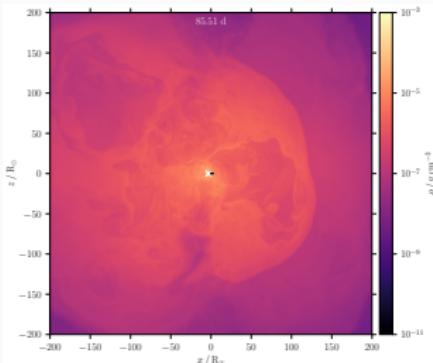
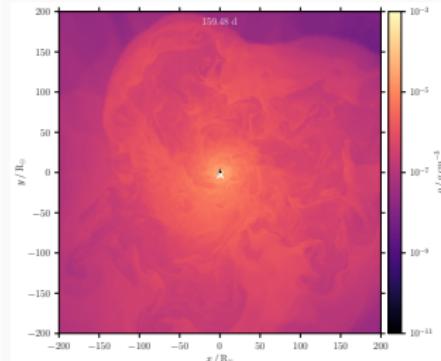
$$\chi = 1.0, \ a_i/R_{\text{RLOF}} = 0.8$$



$$\chi = 0.0, \ a_i/R_{\text{RLOF}} = 0.8$$



$$\chi = 1.0, \ a_i/R_{\text{RLOF}} = 0.95$$



Paths

No.	Binary configuration:
1	$5M_{\odot}$ AGB, $q=0.25$, initial separation at 80% of RLOF with 100% co-rotation
2	$5M_{\odot}$ AGB, $q=0.25$, initial separation at 80% of RLOF with 0% co-rotation
3	$5M_{\odot}$ AGB, $q=0.25$, initial separation at 95% of RLOF with 100% co-rotation

No.	Path:
1	/hits/fast/pso/olofsses/5agb/ce-runs/5Magb/output
2	/hits/fast/pso/olofsses/5agb/ce-runs/5Magb_0.corotation_0.8rlf/output
3	/hits/fast/pso/olofsses/5agb/ce-runs/5Magb_1.corotation_0.95rlf/output

Read-only link to this presentation:

<https://www.overleaf.com/read/rqmskjygmmpz>

Path to video-animation of slices:

/hits/fast/pso/olofsses/5agb/ce-runs/animation