Amir M. Michaelis <amir.m@aminor-tech.com>

Results

5 messages

Amir M. Michaelis <amir.m@aminor-tech.com> Thu, Oct 31, 2019 at 11:21 AM
To: Amit Kashi <kashi@ariel.ac.il>

Hi,
Attached the latest results.
After a long try of different settings I revert to the one that work at New Year's Eve.
I rerun the simulation on graham to see we can reproduce the result (and it did).
I started a overleaf with the basic layout we discussed.
You absolutely correct that the main focus should be writing a paper based on this result.
There is still more post processing analysis to do (I will do it alongside writing the paper).
A few questions about the accretion calculation.
I in every time step look at the star sphere density (i.e. ρ(R_star)) and compare it to the fix density expect from such a star (ρ_fix=9.1e-10 from MESA sim).
Some of the density is above it and some are below it that is ρ(R_star)-ρ_fix>0 on some cells and ρ(R_star)-ρ_fix<0 at others.
I take the accretion as the sum of the absolute of all the cells i.e. Σ |ρ(R_star)-ρ_fix|.
My question is it o.k.? dose the sign have any significance?
I do make sure that the velocity is inside (**V** dot **r** <0).
There is a mistake in ylabel the mass is in gram and not in Msun will fix it in the future.

Amir.

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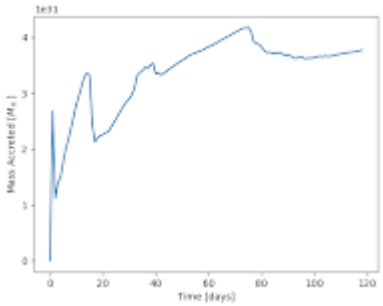
2 attachments



accretion-abs.png
23K

slice.mp4
3078K

Amit Kashi <kashi@ariel.ac.il> Thu, Oct 31, 2019 at 11:24 AM
To: "Amir M. Michaelis" <amir.m@aminor-tech.com>

Got it.

I am a little busy. Will write you later.

Amit

Amit

From: Amir M. Michaelis <amir.m@aminor-tech.com>
Sent: Thursday, October 31, 2019 11:21:24 AM
To: Amit Kashi <kashi@ariel.ac.il>
Subject: Results

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Amir M. Michaelis <amir.m@aminor-tech.com> Thu, Oct 31, 2019 at 3:40 PM
To: Amit Kashi <kashi@ariel.ac.il>

The accretion graph is incorrect.
Attached a newer version.

Amir.

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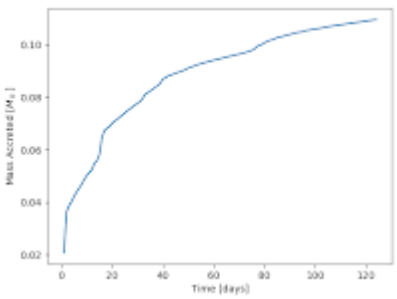

accretion.png
21K

Amir M. Michaelis <amir.m@aminor-tech.com> Thu, Oct 31, 2019 at 3:55 PM
To: Amit Kashi <kashi@ariel.ac.il>

Also attached the diff(accretion(t)).

Amir.

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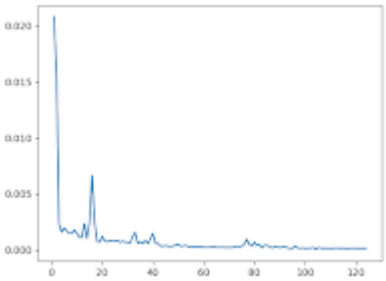

accr_rate_01.png
19K

Amit Kashi <kashi@ariel.ac.il> Thu, Oct 31, 2019 at 7:07 PM
To: "Amir M. Michaelis" <amir.m@aminor-tech.com>

Hi,

The results are intersting and the movies look wonderful. I am happy with your progress.

To your questions:
I don't quite understand why we should ever get ρ(R_star)-ρ_fix>0.
This would imply material traveling outwards, or if as you check v dot r <0, then maybe it implies material coming from the sides, still in the star. I am not sure.
Taking the absolute value doesn't seem right to me.

Are you fixing the star's density every timestep?

I also think you shouldn't compare to the value you get from MESA but rather to the value you have in the cells in flash, which can be different as the cells resolution in FLASH is worse than that of MESA, and interpolation takes place. So I suggest to check rho_fix at t=0 from the simulation value and compare to this value for the duration of the simulation.

About the condition v dot r <0 .
I don't know if it's enough ,as it includes angles in the half sphere pointing the star.
A better conditon is something like v dot r / ((abs(v)*abs(r)) < A.
If A=-1 then the direction is directly to the star. You can choose A according to the cell size, so that it allows one cell size deviation from direct accretion. So A will still be negative but larger than -1.
Think about it, maybe you will find a better or a more simple approach.

The above comments are not to imply that what you are doing is wrong. In first order you are doing very well. I just want to think together with you if we can do better.

Amit

From: Amir M. Michaelis <amir.m@aminor-tech.com>
Sent: Thursday, October 31, 2019 15:55
To: Amit Kashi <kashi@ariel.ac.il>
Subject: Re: Results

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