Kerbal Space Program - Bug #26898

Extraneous part mass

12/20/2020 02:48 AM - tehmattguy

Status:	Resolved	**Start date:**	12/20/2020
Severity:	Low	**% Done:**	100%
Assignee:			
Category:	Parts		
Target version:	1.11.1		
Version:	1.11.0	**Language:**	English (US)
Platform:	Windows	**Mod Related:**	No
Expansion:	Breaking Ground, Core Game		

Description

Certain parts or part combinations have gained mass which isn't accounted for in the game.
Seems to affect low-mass, physics-enabled parts like grip pads, small robotic parts, and empty dumpling fuel tanks.
Also affects low-mass physics-less parts if they're attached to a robotic part.
Crafts using these parts have gained a significant amount of mass which isn't shown in the editor, nor accounted for in the delta-v calculations.

History

#1 - 12/20/2020 01:40 PM - tehmattguy

Edit:

I did more testing and it seems like the game raises the mass of low-mass parts to be at least 0.03t.
Empty dumpling tanks, empty oscar-B tanks, small grip pads, and small robotic parts apparently weigh 0.03t despite editor info.

#2 - 12/20/2020 03:40 PM - Anonymous

- File seesaw2.craft added

- Status changed from New to Confirmed

- % Done changed from 0 to 10

- Expansion Core Game added

Confirming with just core-game parts. Two (2) '10-kg' Z-200 batteries outweigh one (1) '50-kg' Z-1000 battery, when loaded in KSP version 1.11.0

Not all parts behave as if they have this 30-kg minimum mass, but many do.

#3 - 12/23/2020 07:13 PM - tehmattguy

- File Scale.craft added

#4 - 12/23/2020 08:53 PM - tehmattguy

- File screenshot21.png added

- File screenshot22.png added

- File screenshot23.png added

- File test6.png added

Added more screenshots/ info to help clarify the 0.03t issue

#5 - 12/23/2020 08:53 PM - tehmattguy

- File deleted (test4.png)

#6 - 12/27/2020 06:58 PM - Anonymous

Reported in this thread https://forum.kerbalspaceprogram.com/index.php?/topic/198851-111-part-mass-bug/&tab=comments#comment-3896452 where Stamp 20 points out the new line in Physics.cfg:

```
partRBMassMin = 0.03 // Minimum mass that a parts RigidBody can have - If this is too small then PhysX will no
t behave when it is dropped as a vessel, this is the default if minimumRBMass is not defined in the part cfg.
```

This observation inspires the obvious edit to 'Physics.cfg'
~~partRBMassMin = 0.005~~
which solves the problem for me. (I tried a Module-Manager patch but it did not take effect on KSP startup.) The adjusted minimum mass was 5kg, to match the minimum mass of all parts that have their mass attached to their body (as opposed to the smallest parts, flagged PhysicsSignificance=1, for which KSP adds their mass to the parent part).

The obvious potential side-effect, based on the comment in physics.cfg, would be if parts with mass in the range 5kg to 30kg start behaving badly when dropped on the ground during EVA construction.

However, some mods have lighter parts that can be independent rigid bodies, specifically the GP-004 grip pad from Breaking Ground used in some examples posted above. So for games including these parts, a lower minimum

```
  partRBMassMin = 0.002
```

New bug-report #26939 might have the same cause, but shows a different symptom in that the trajectory plotter sees a different center-of-mass than the physics engine.

#8 - 01/22/2021 04:33 AM - Well

k-ohara5a5a@oco.net wrote:

> However, some mods have lighter parts that can be independent rigid bodies, specifically the GP-004 grip pad from Breaking Ground used in some examples posted above. So for games including these parts, a lower minimum
> [...]

My mod add 0.625 rocket parts to the game, so all my parts have a really small mass. In 1.11 with this mass added to all small parts, my mods is just broken, Rocket can't reach space anymore with a huge amount of False DeltaV showed. A lot of work broken with this update. Could be great to think about modders when you update things like that, Playing with KSP physics is never a good idea. I hope this could have a fix, i suggest the lower min mass possible to avoid any more problem, even if i think adding "virtual" mass to a parts wich is not defined to have this mass is not a good idea.

#9 - 01/29/2021 01:39 PM - victorr

- Status changed from Confirmed to Ready to Test

- Target version set to 1.11.1

- % Done changed from 10 to 80

We've made some changes in the latest version of the game and would like some feedback on this issue. Thanks.

#10 - 01/30/2021 03:57 AM - tehmattguy

- File screenshot0.png added

- File screenshot1.png added

victorr wrote:

> We've made some changes in the latest version of the game and would like some feedback on this issue. Thanks.

Thanks for the update, from what I can tell reducing partRBMassMin to 0.002 fixed the mass issues for most physics-enabled parts. However I believe any physics-enabled part lighter than 0.002t will still be affected by the 0.002t minimum. For example the Tiny Nosecone, a physics-enabled part which should weigh 0.001t, still has an apparent weight of 0.002t.

Also, while testing for physics-less parts I found that attaching them directly to a robotic part seems to give them a minimum mass of 0.0065t. This mass isn't shown in the editor but is accounted for in-flight through the delta-v readouts. This effect is also present in version 1.10.1 so I don't know whether it's intentional or not.

#11 - 08/13/2021 12:58 PM - Technicalfool

- Status changed from Ready to Test to Resolved

- % Done changed from 80 to 100

Should be resolved now. Please report if it isn't.

Files

test1.png	1.18 MB	12/20/2020	tehmattguy

screenshot13.png	2.43 MB	12/20/2020	tehmattguy
screenshot18.png	2.44 MB	12/20/2020	tehmattguy
seesaw2.craft	12.3 KB	12/20/2020	Anonymous
Scale.craft	76.9 KB	12/23/2020	tehmattguy
screenshot21.png	2.48 MB	12/23/2020	tehmattguy
screenshot22.png	2.05 MB	12/23/2020	tehmattguy
screenshot23.png	2.35 MB	12/23/2020	tehmattguy
test6.png	1.08 MB	12/23/2020	tehmattguy
screenshot0.png	2.19 MB	01/30/2021	tehmattguy
screenshot1.png	2.27 MB	01/30/2021	tehmattguy