

GAPs

Gas Accretion in Planets

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How does gap formation affect the mass of gas giant planets?

How does it affect their orbital distribution, by slowing their migration rate?

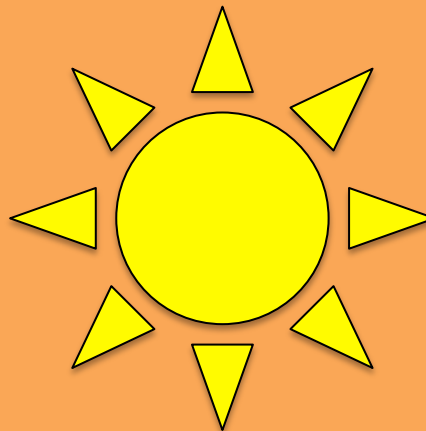
How does gap formation affect the mass of gas giant planets?

~~**How does it affect their orbital distribution, by slowing their migration rate?**~~

Methods of Gas Accretion

(Reduction in accretion rate after gap opening)

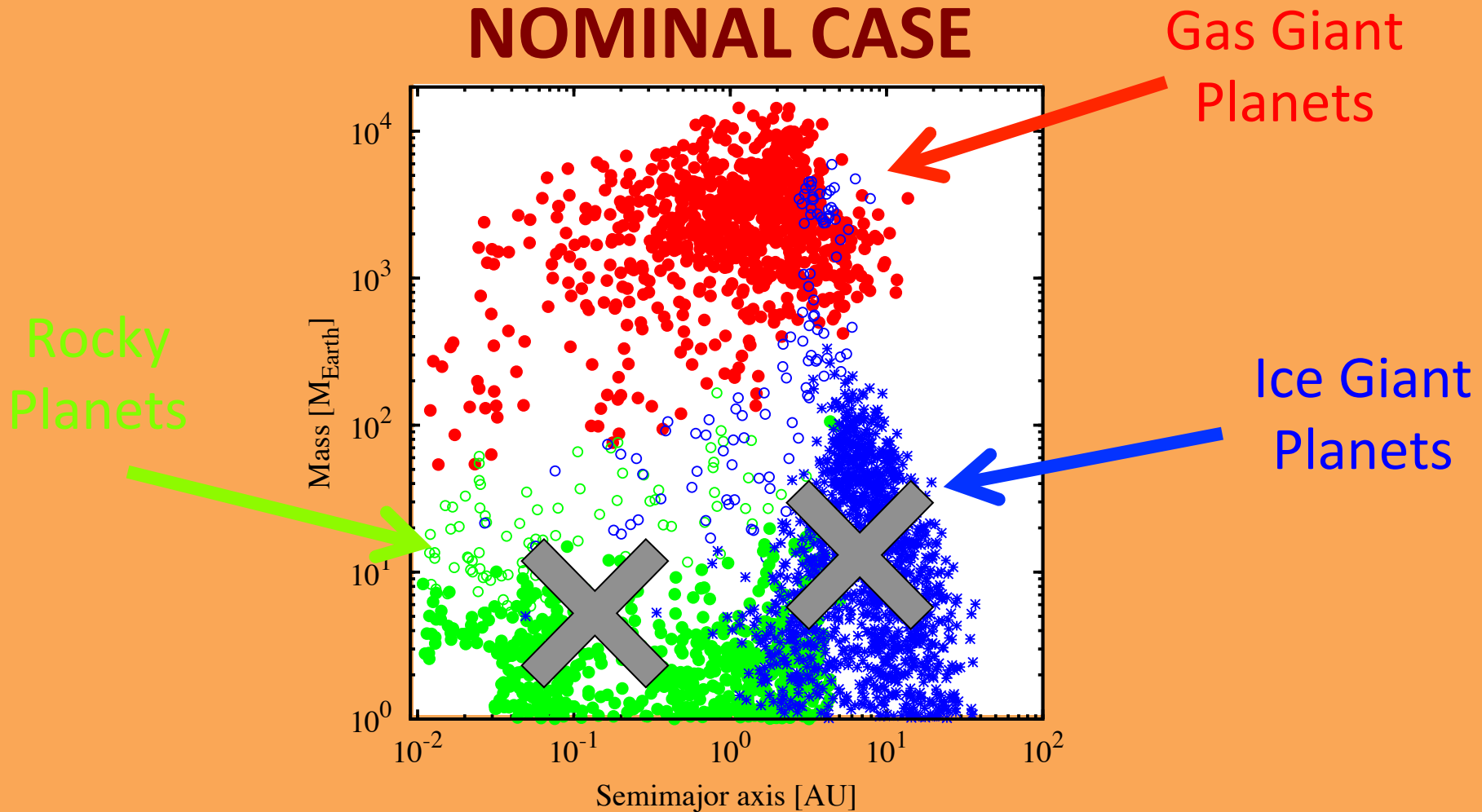
NOMINAL CASE



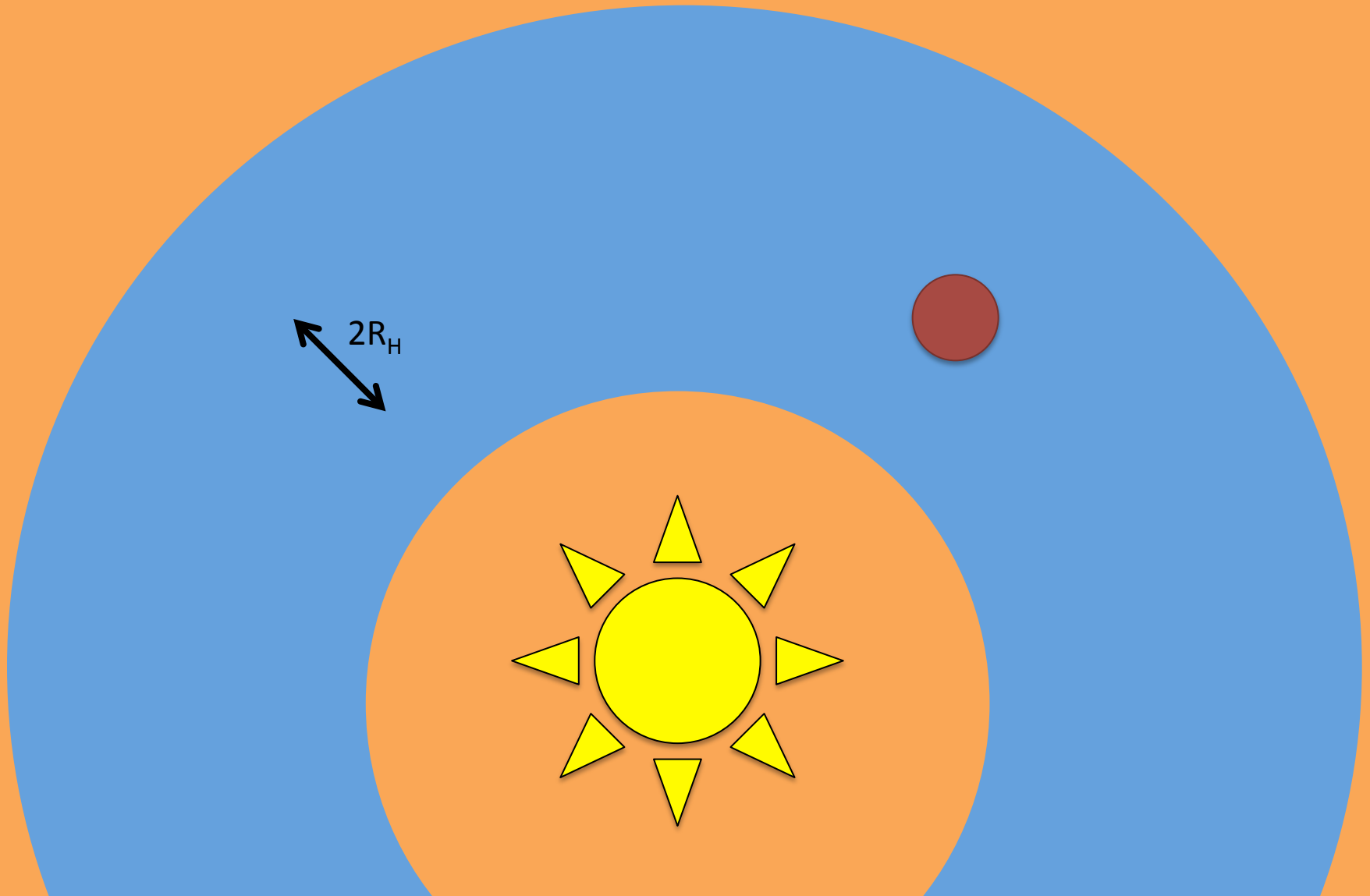
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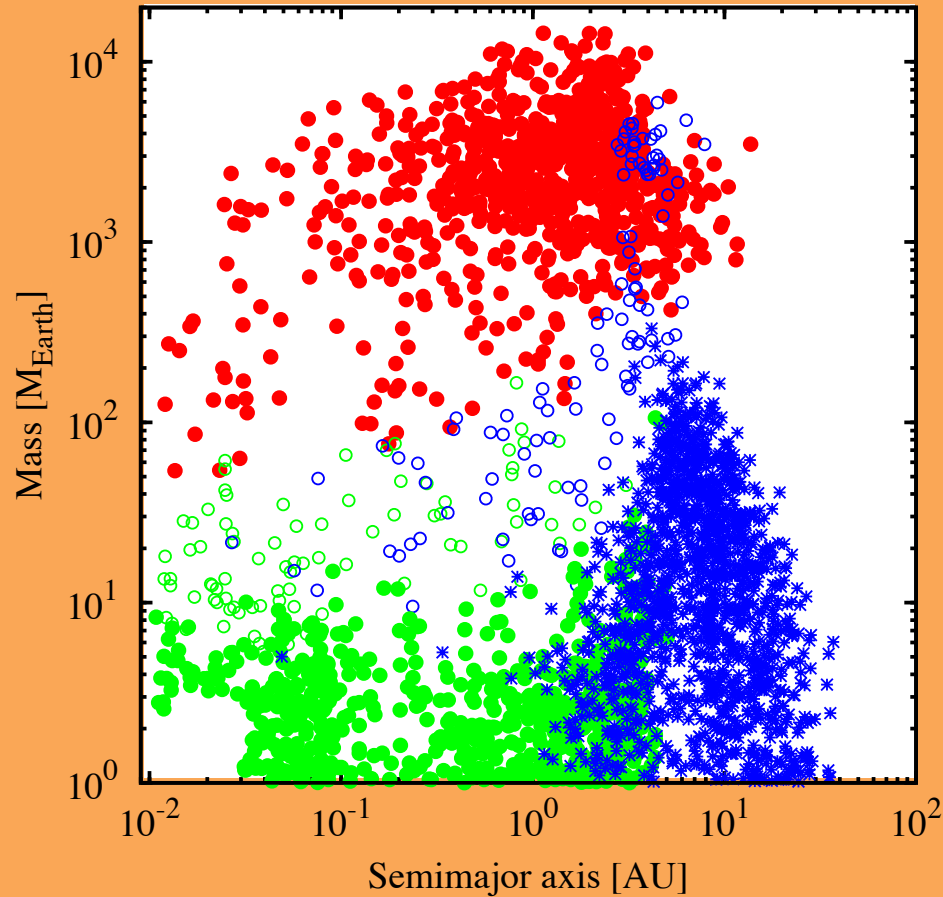


Methods of Gas Accretion (Truncation at gas isolation mass)

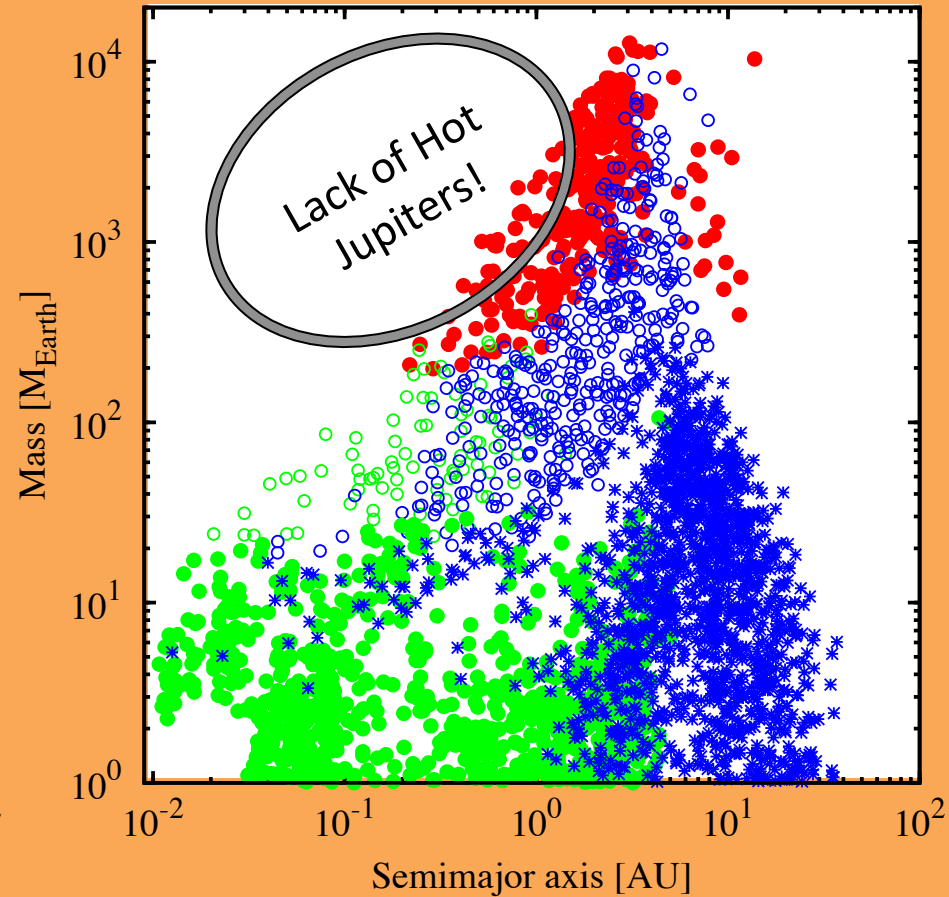


Methods of Gas Accretion

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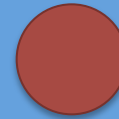
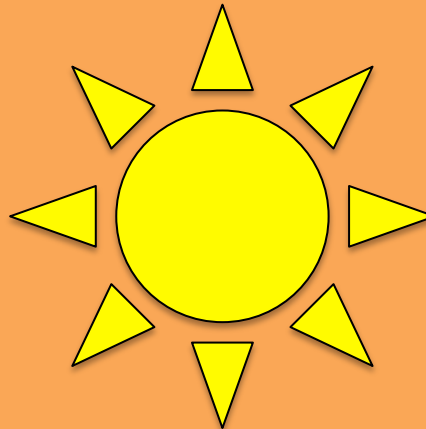


Nominal Case



Methods of Gas Accretion (Truncation at gap opening mass)

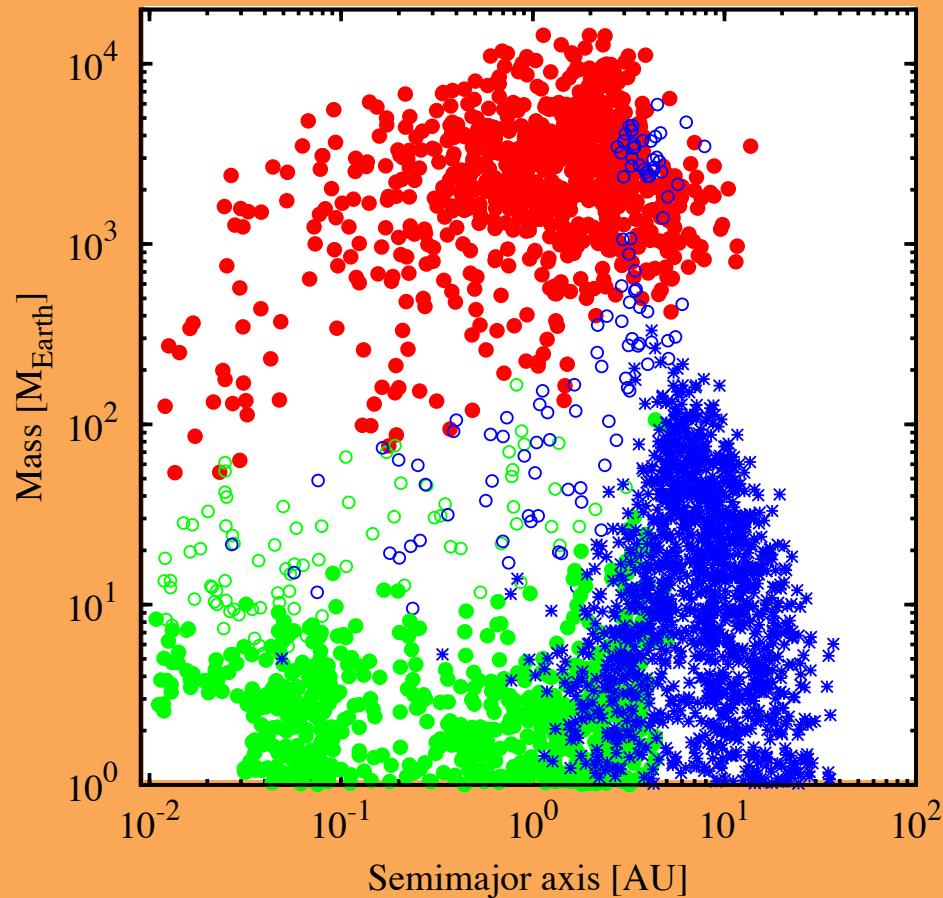
$$R_H > 1.0H$$



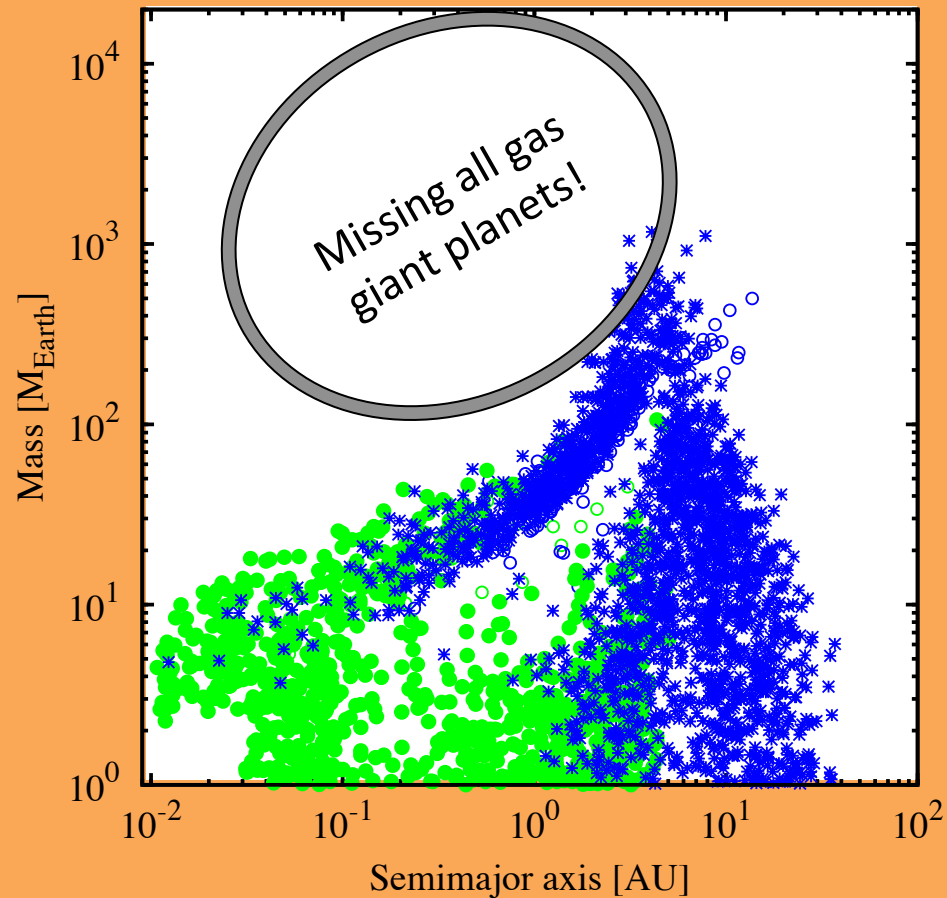
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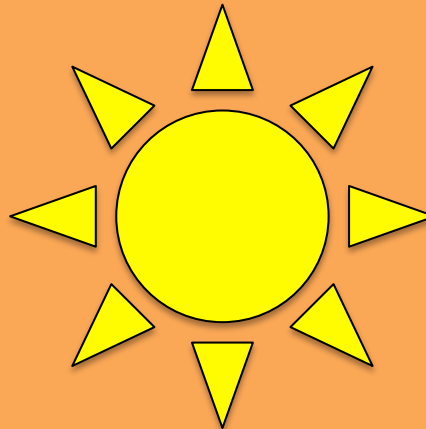


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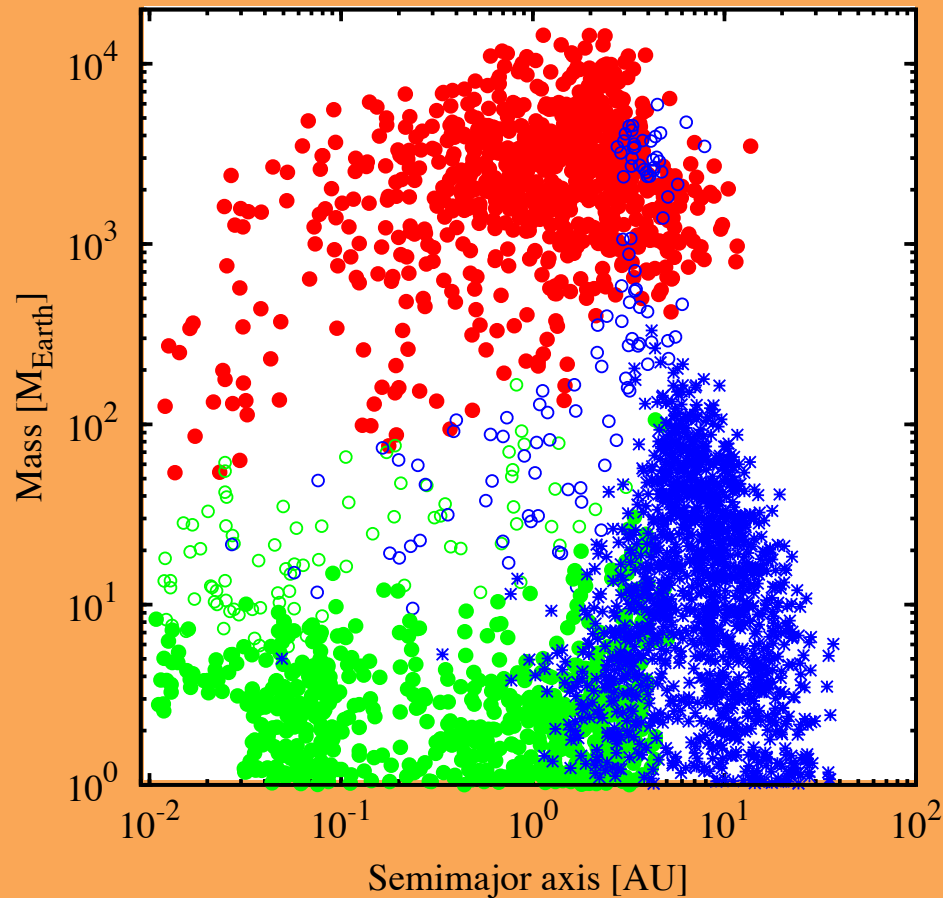
Methods of Gas Accretion (Truncation at gap opening mass)

$$R_H > 1.5H$$

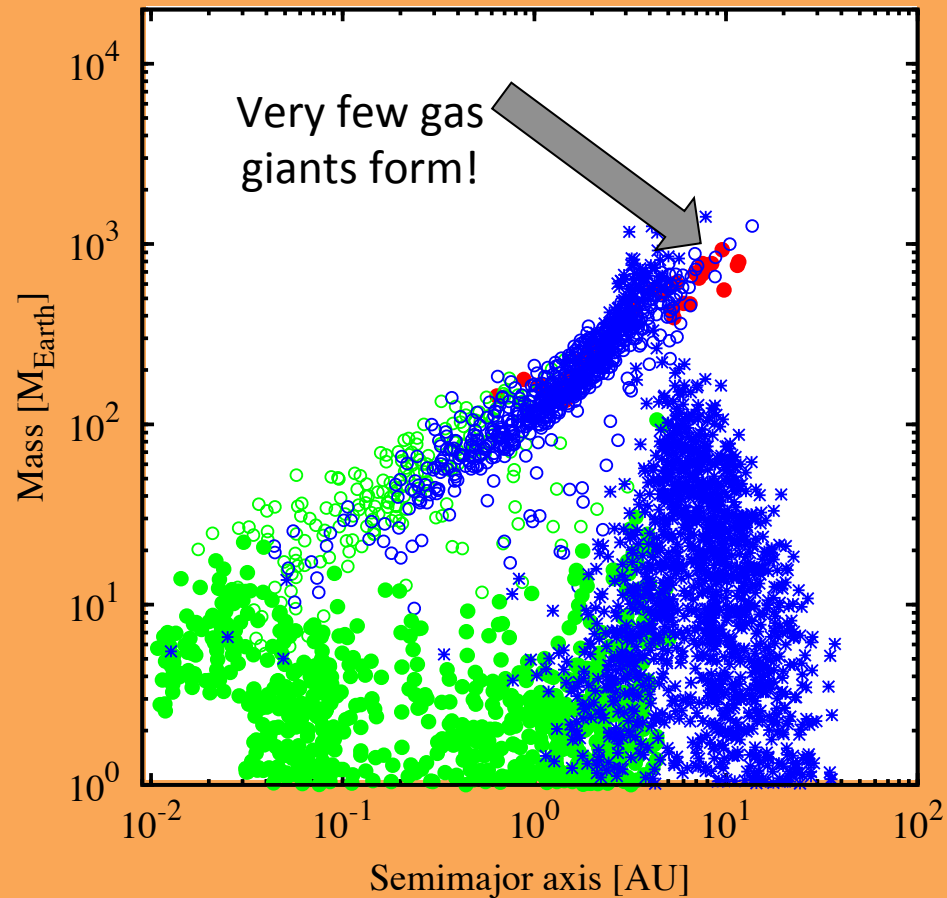


Methods of Gas Accretion (Truncation at gap opening mass)

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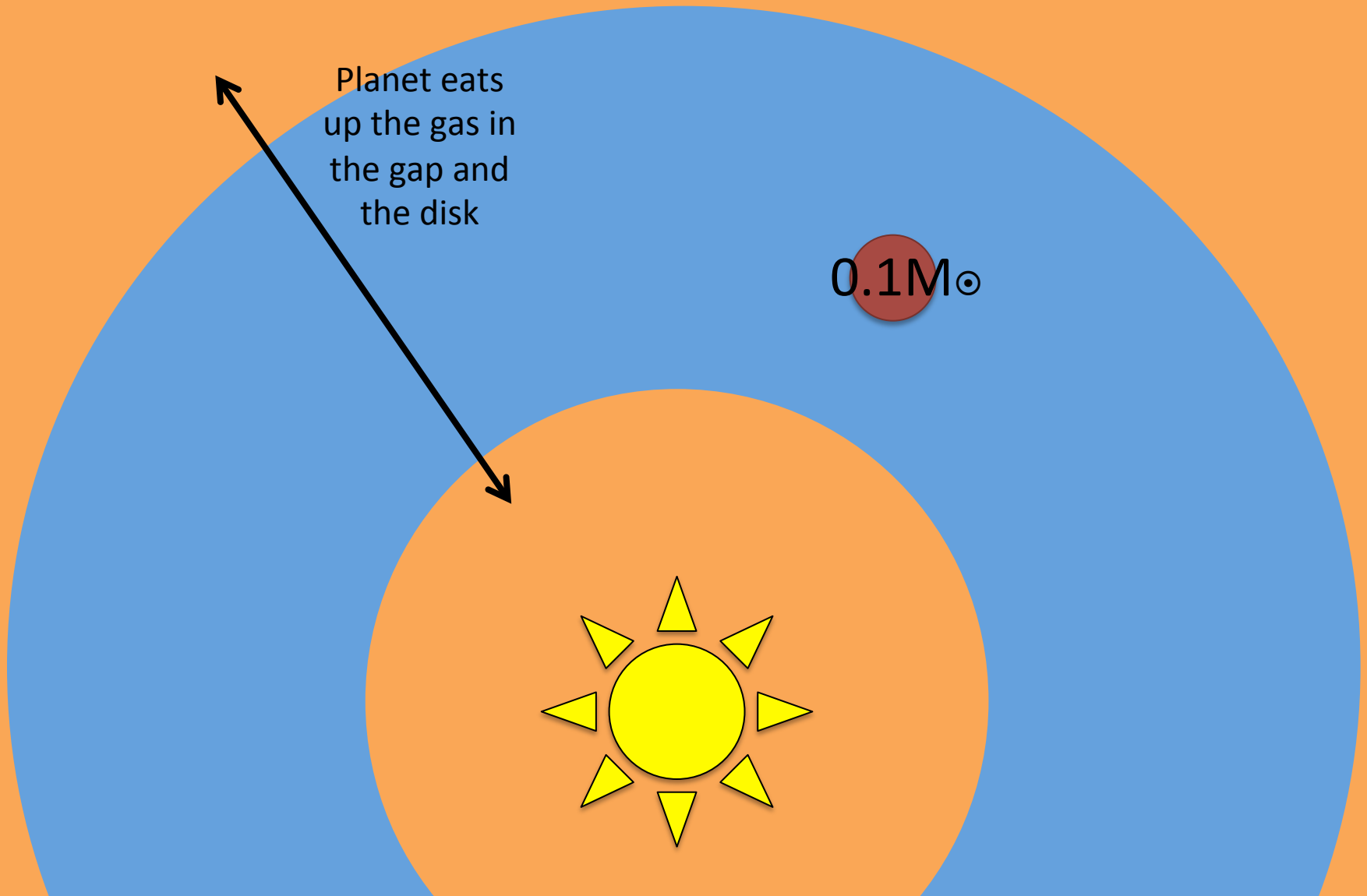


Nominal Case



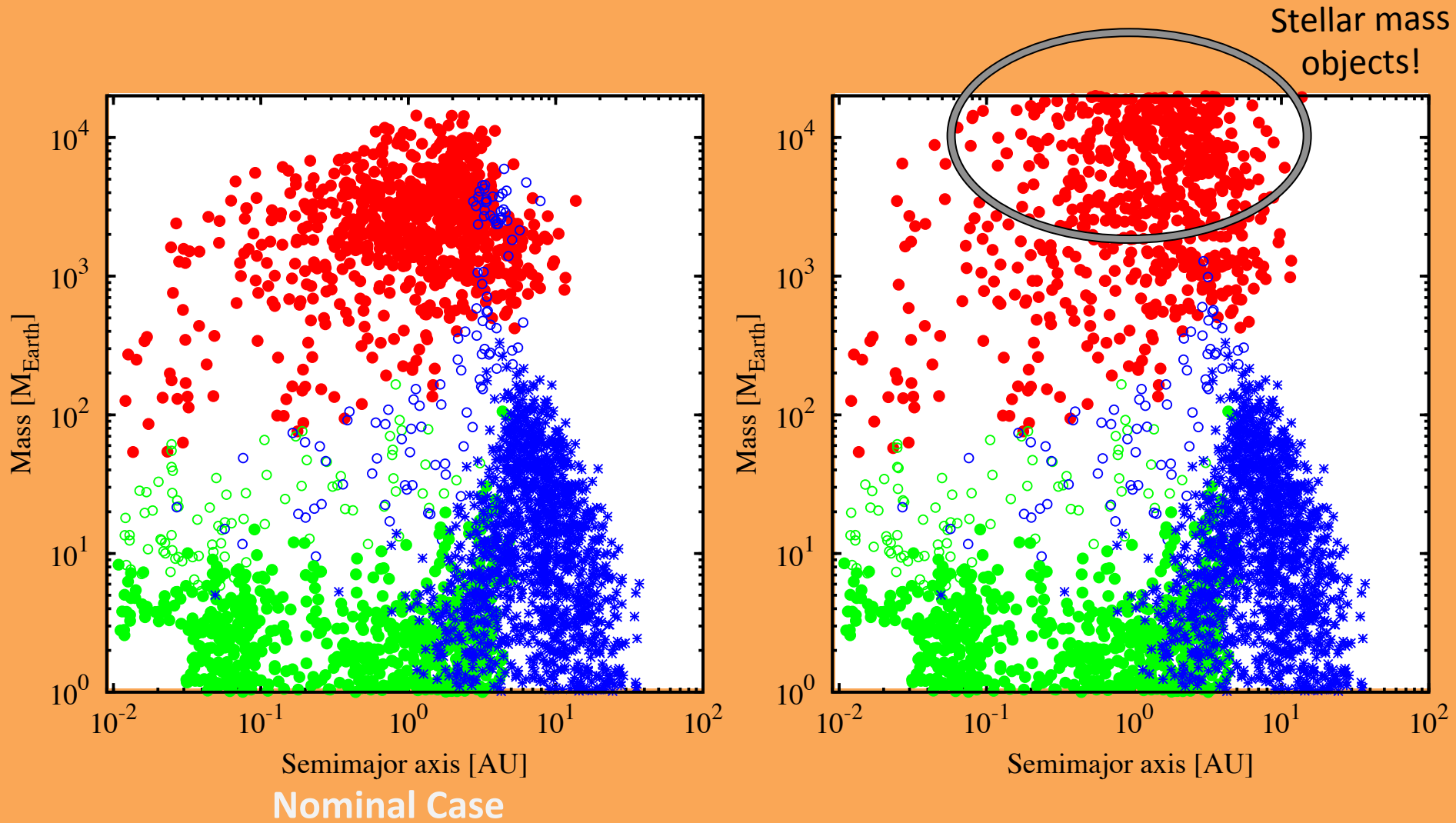
Methods of Gas Accretion

(Growth until planet reaches stellar mass)



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Conclusion

- Halting accretion after gap opening prevents high mass planets from forming
- Unlimited accretion leads to the formation of star-mass gas planets
- When the gap opens decides the number of high mass planets that are able to form