Geography(Foundation)

Solar system

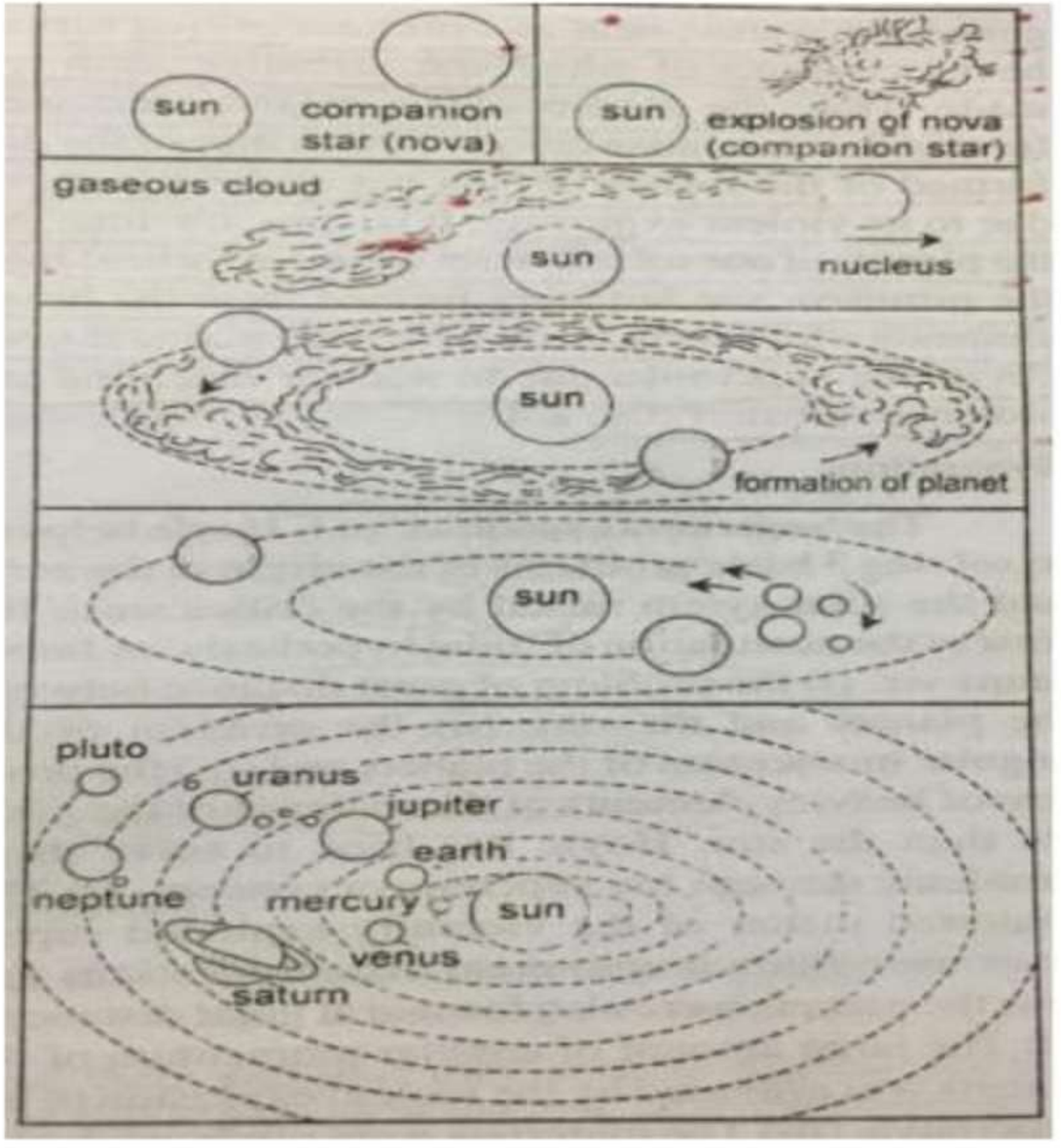
सौर मंडल

By : Ajeet Sir

BINARY STAR HYPOTHESIS OF RUSSELL (1937)

रसेल की द्वैतारक पारिकल्पना।

Research Paper → 1933



BINARY STAR → Meaning → Two Stars.
दो तारे।

RUSSELL ⟹ UNIVERSE | ब्रह्माण्ड

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सूर्य के आलावा अन्य दो तारे थे।

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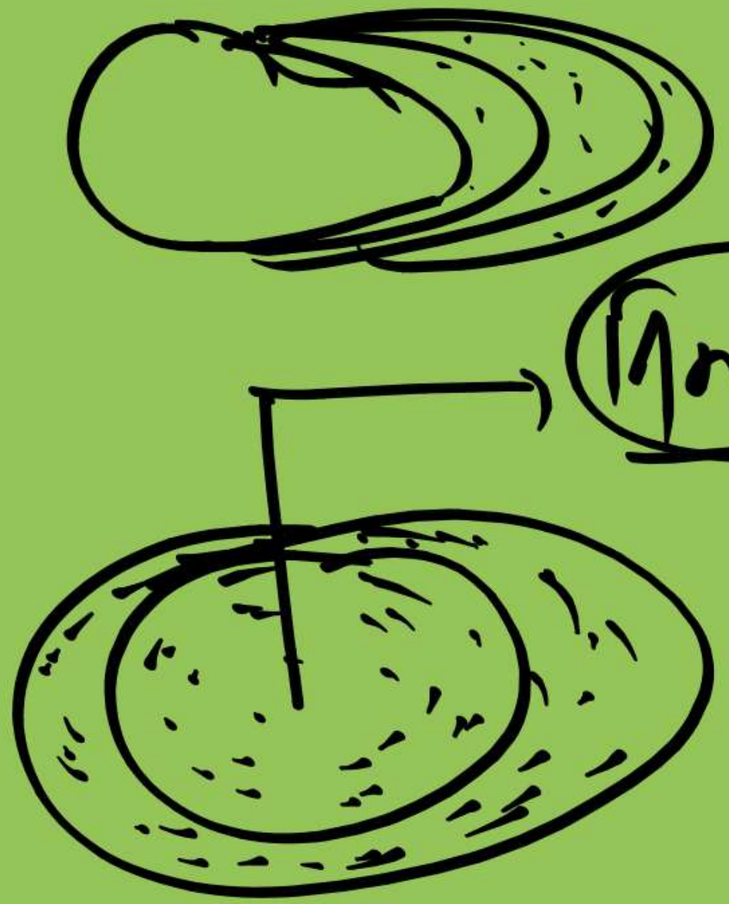
Sun and Two Stars

(1)

Sun

Sun



Separated materials

मिलाए हुए

अलग हुए पदार्थ

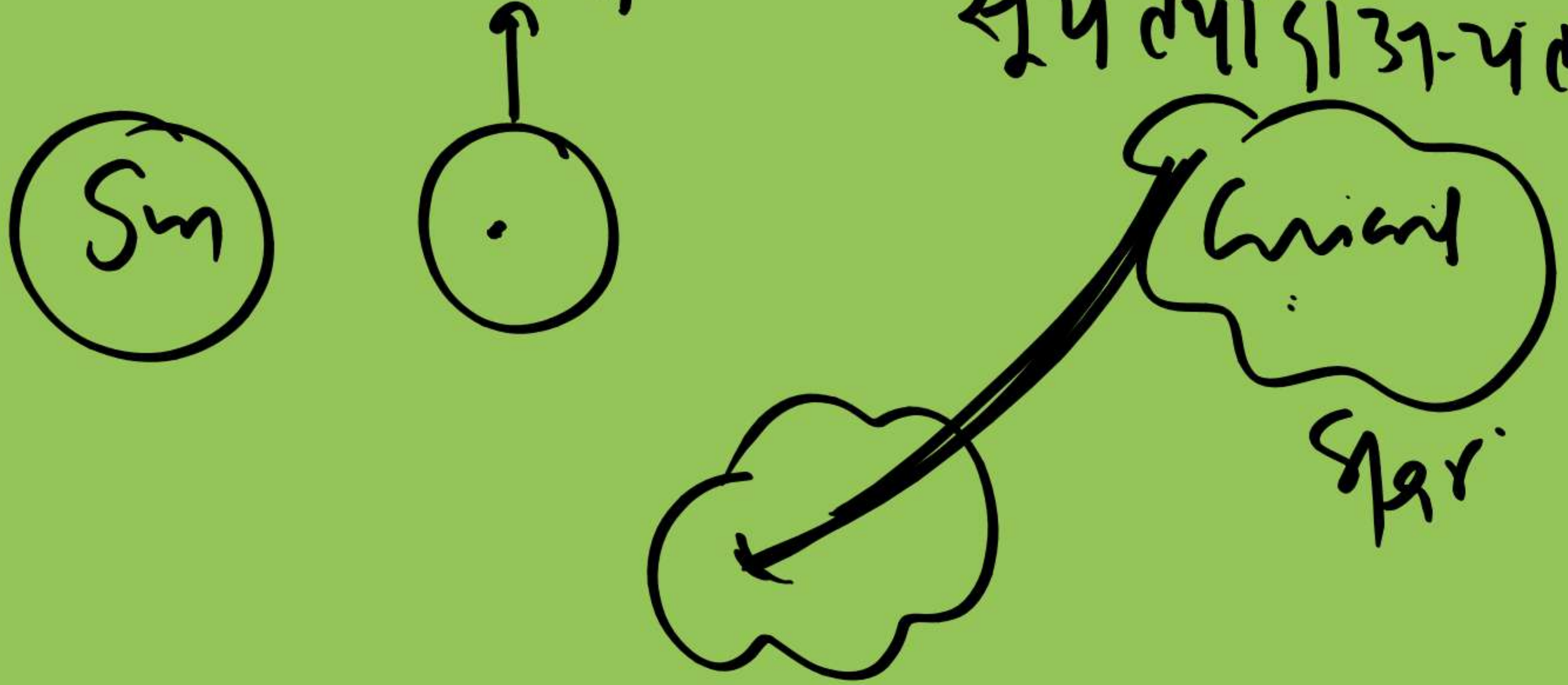
ग्रहों का निर्माण

Formation of Planet

RUSSELL સૌરમંડળ → ઉત્પત્તિ → Sun તથા Two અન્ય તારે

સાથી તારો

સૂર્ય તથા બે અન્ય તારે



Drawbacks:

कमियां

सूर्य के गुरुत्वाकर्षण बल

का प्रभाव दूसरे तारे पर क्यों नहीं

पड़ा।

What about the impact of Gravitational force of sun on other star.

② दूसरे तारे का क्या होगा

What about the Remaining Part of other star.

③ दूसरी ग्रहों की संरचना एक समान होनी चाहिए

Structure of Planets Must be similar

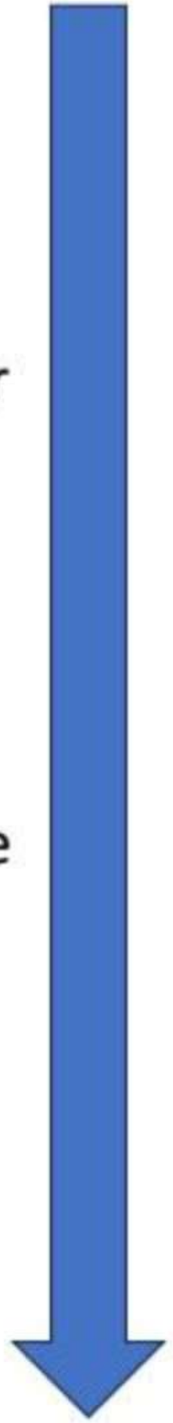
BINARY STAR HYPOTHESIS OF RUSSELL (1937) | द्वैतारक सिद्धांत

1. Russell opined that there were two stars near the primitive sun in the universe.

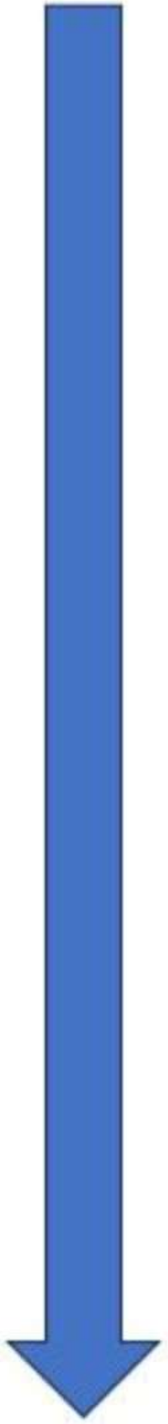
2. In the beginning the 'companion star' was revolving around the primitive sun. Later on one giant star (the third one) named as 'approaching star' came near the companion star but the direction of revolution of the approaching star was opposite to that of the companion star.

3. It was believed that the distance between two stars might have been about 48,00,000 to 64,00,000 km.

- There would have been no effect of tidal force of the giant approaching star on the primitive sun but large amount of matter of the companion star was attracted towards the giant approaching star because of its massive tidal force (gravitational pull).



- When the giant approaching star came nearest to the companion star, large amount of matter was ejected from the companion star due to maximum gravitational force exerted by the giant approaching star.
- The ejected matter started revolving in the direction of the giant approaching star and thus opposite to the direction of revolution of companion star.



- Later on planets were formed from the ejected matter.
- In the beginning the planets might have been nearer to each other and thus matter might have been ejected from these planets due to their mutual attraction
- Thus satellites might have been ejected from these planets due to their mutual attraction and thus satellites might have been formed from these matter.

Drawback.

कमियां

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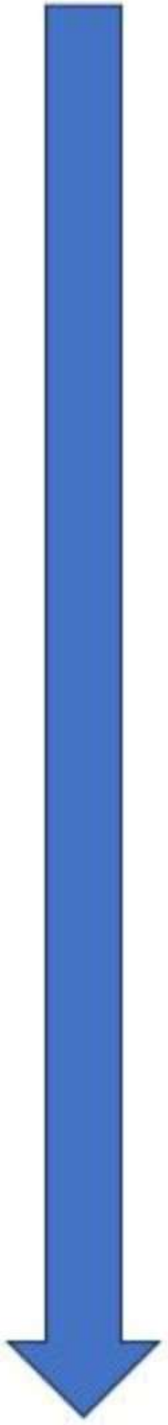
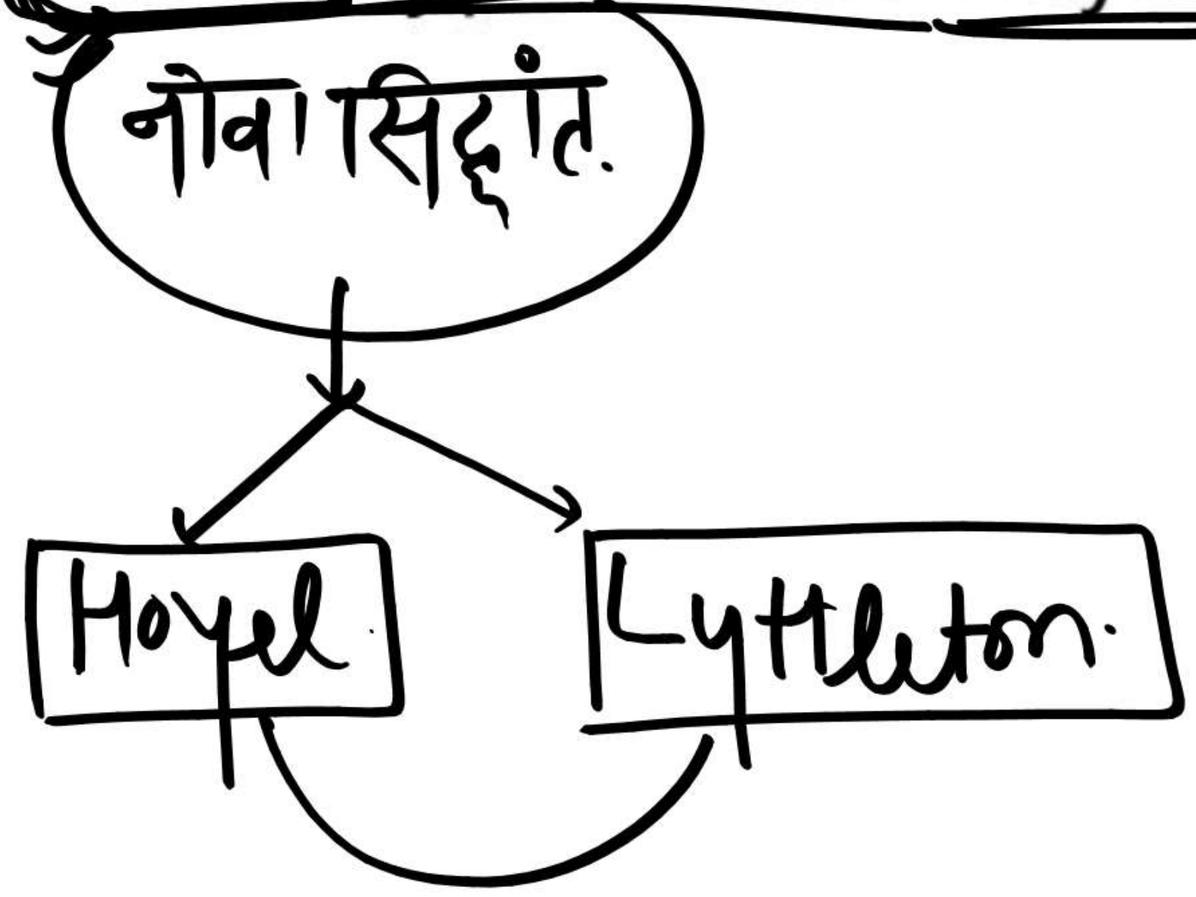
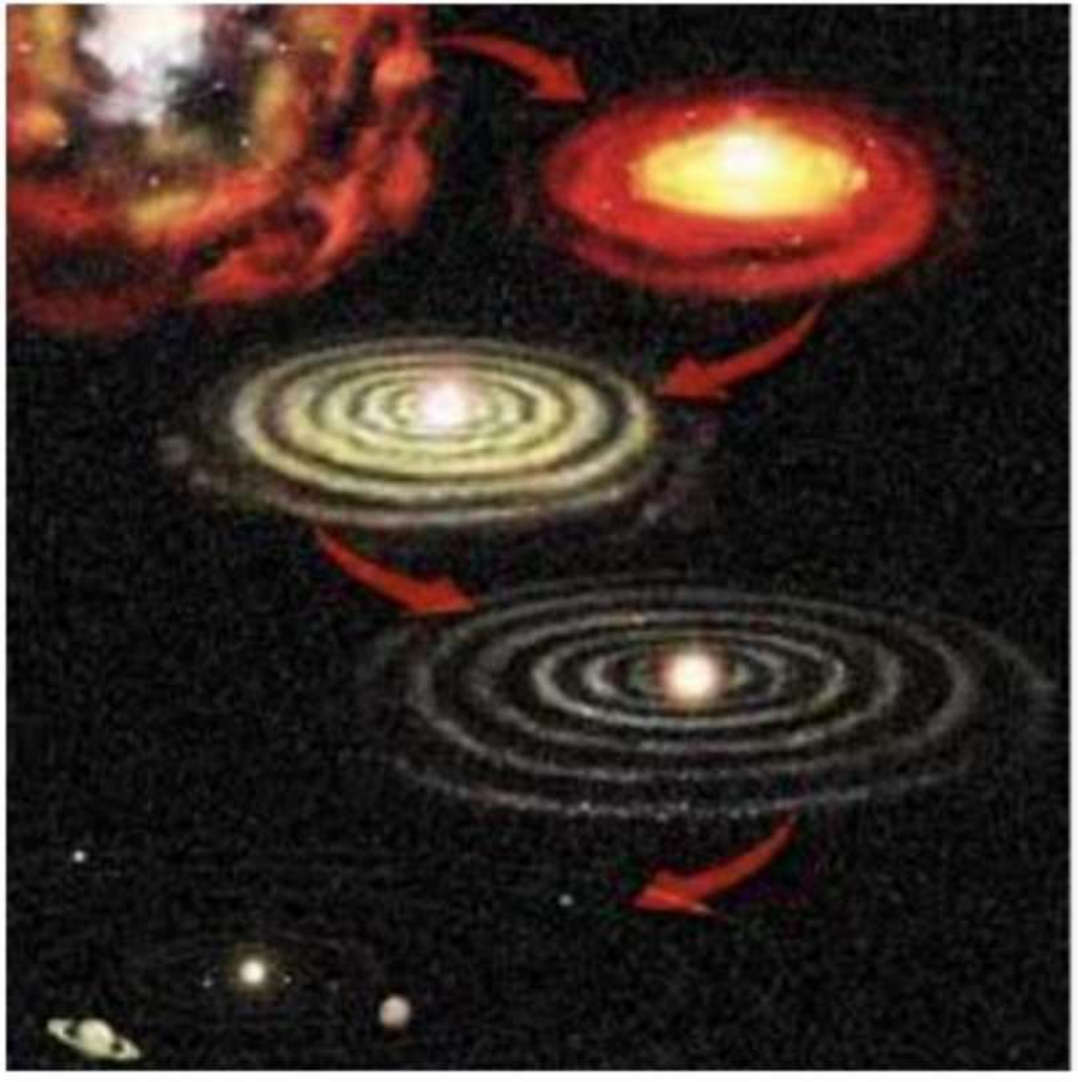
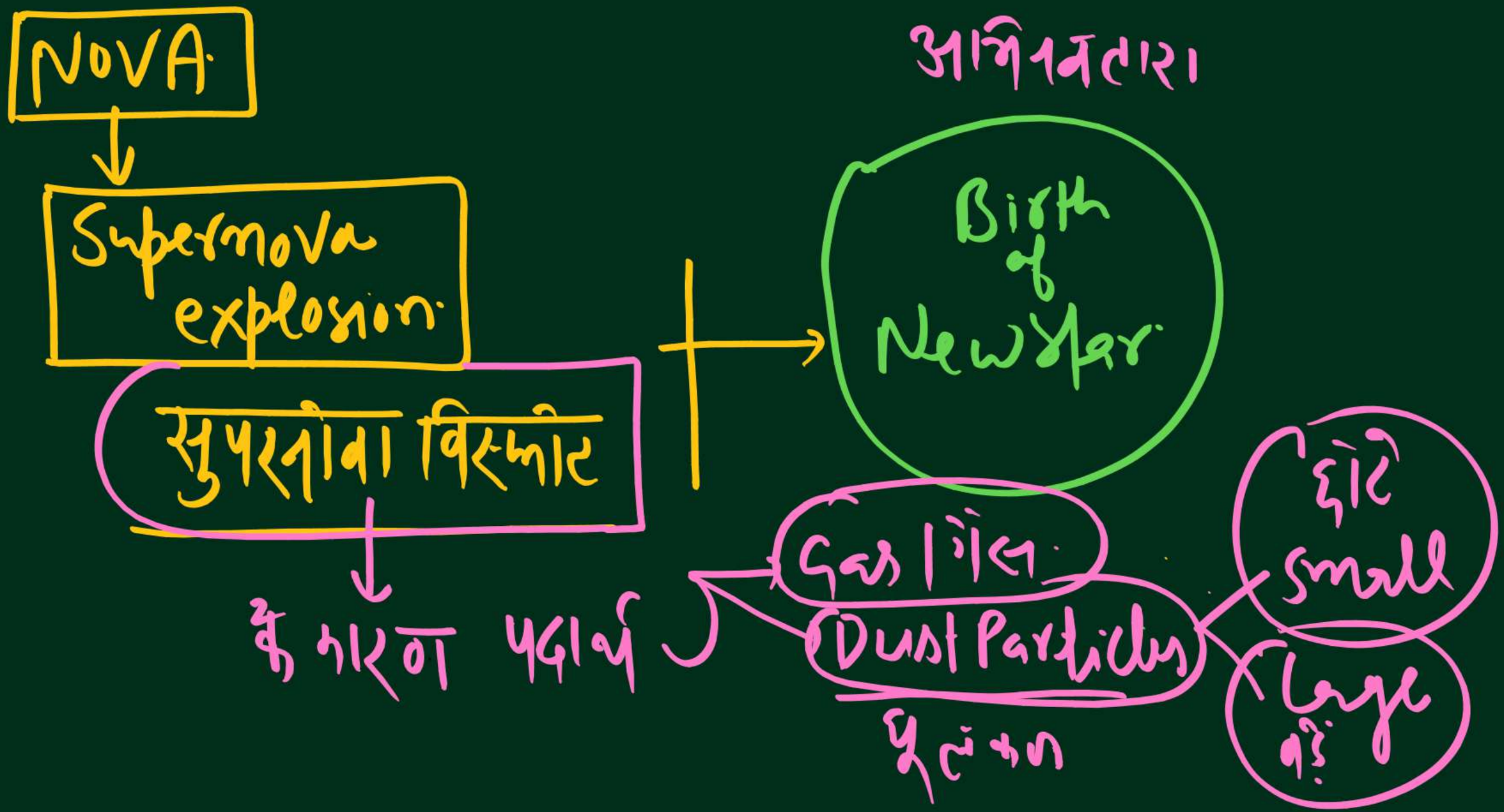
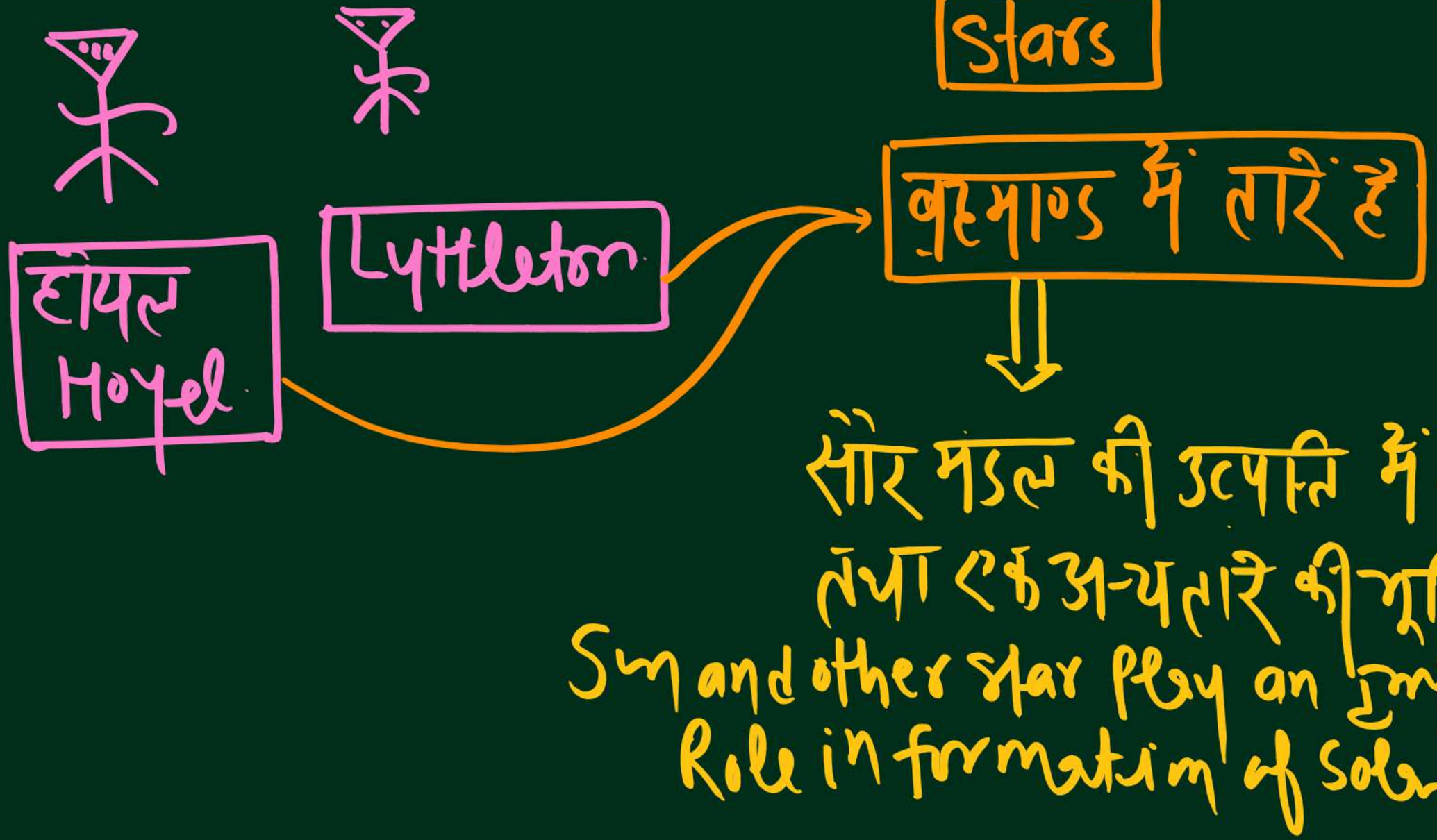


Nova hypothesis - hoyle and lyttleton






NOVA
Supernova explosion
सुपरनोवा विस्फोट
आशीर्वाद
Birth of New Star
के कारण पदार्थ
Gas / गैस
Dust Particles
धूलिकण
छोटे
small
Large
बड़े


Stars
ब्रह्माण्ड में तारे हैं
हॉयल
Hoyel
Lyttleton
सौर मंडल की उत्पत्ति में सूर्य तथा एक अन्य तारे की भूमिका है।
Sun and other star play an important Role in formation of Solar System

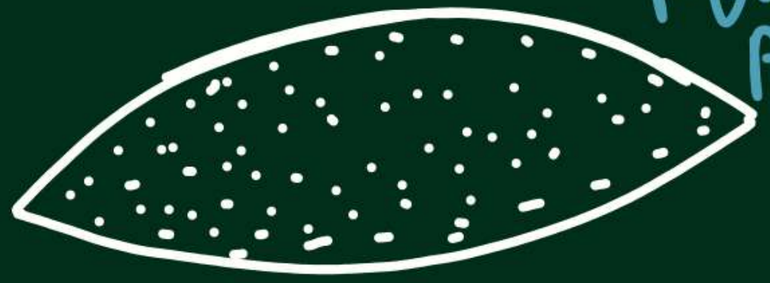
3

Sun

विस्फोट के पश्चात निकले Material After explosion पदार्थ

4

Sun



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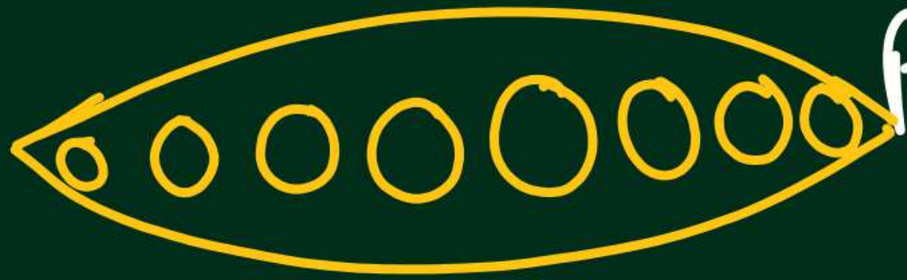
इन्हीं पदार्थों से ग्रहों एवं उपग्रहों की उत्पत्ति

5

Sun



Formation of Planets and Satt.

Planets / ग्रह

Nova hypothesis - hoyle and lyttleton

•According to Hoyle initially there were two stars in the universe –

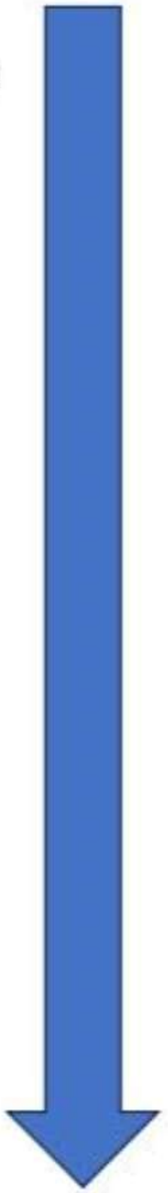
- **Primitive Sun and**
- **Companion star**

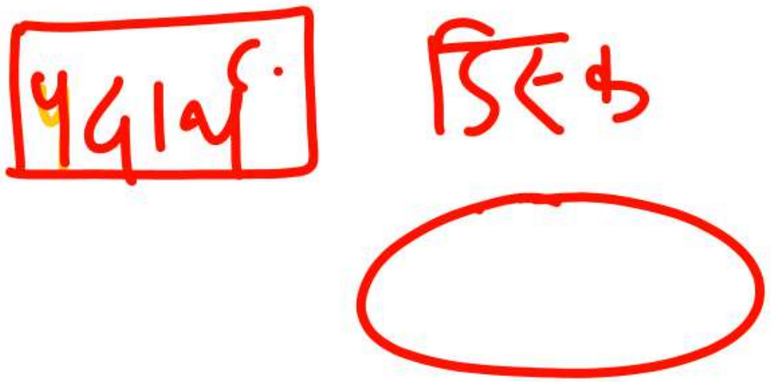
•The **companion star was giant** and later on **became supernova** due to nuclear reaction.

•Over time, all of the hydrogen nuclei of companion star were consumed in the process of nuclear reaction and it collapsed and violently exploded

Nova hypothesis - hoyle and lyttleton

- The **Violent explosion of companion star resulted in the spread of enormous mass of dust which started revolving around the primitive sun** in the form of a circular disc
- The matter of this disc became building material for the formation of the future of planets.
- Thus, **the planets of our solar system were formed due to condensation of the matter** of the





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DrawBack.

कमियां

सुपरनोवा विस्फोट से ही अगर सौरमंडल की उत्पत्ति हुई है तो अन्य तारों के विस्फोट से सौरमंडल की उत्पत्ति क्यों नहीं हुई

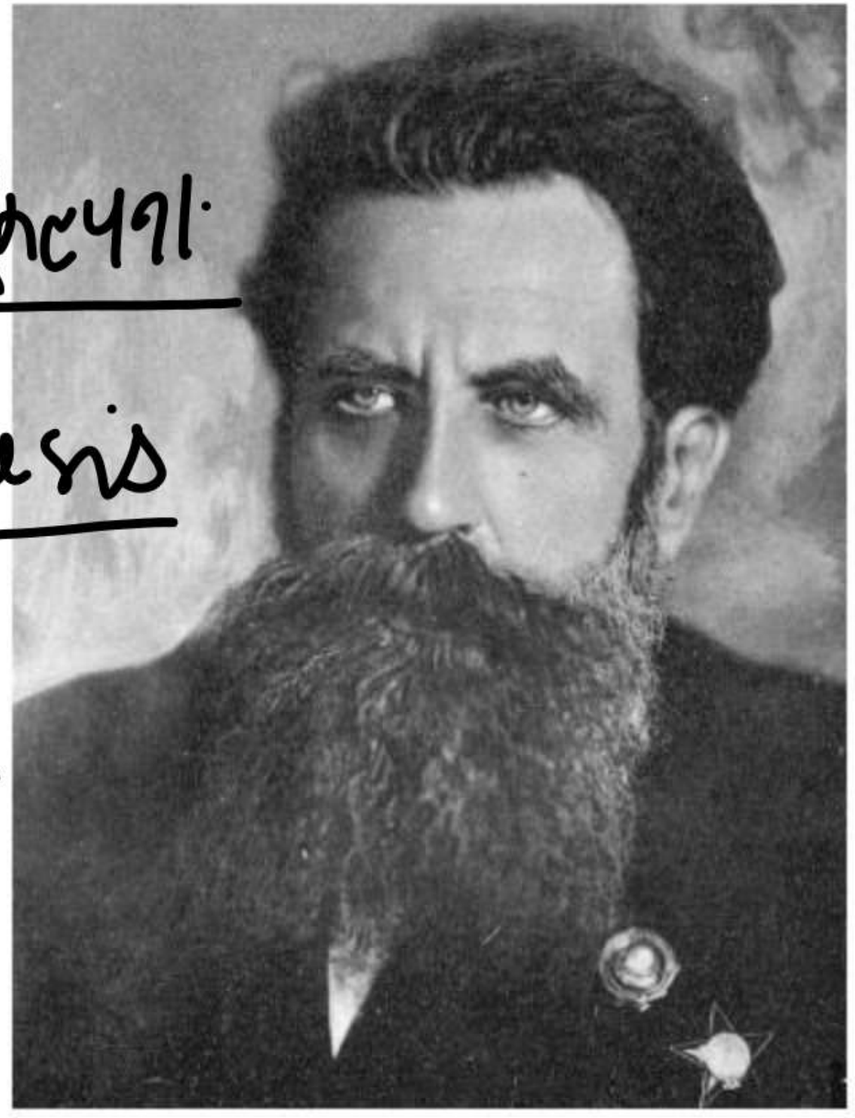
Schmidt's interstellar hypothesis(श्मिट की अंतरतारकीय परिकल्पना 1943)

श्मिट की अंतरतारकीय धूल परिकल्पना

Interstellar Hypothesis

Key Point → Interstellar

अंतरतारकीय



अंतर-तारकीय

Dust Particles between Stars | तारों के बीच धूल कण

आरो-इमेट → UNIVERSE ब्रह्माण्ड → Stars तारे

धूल कण
Dust Particles
Gases गैस

Space खाली स्थान

बीच खाली स्थानों
Space between Stars

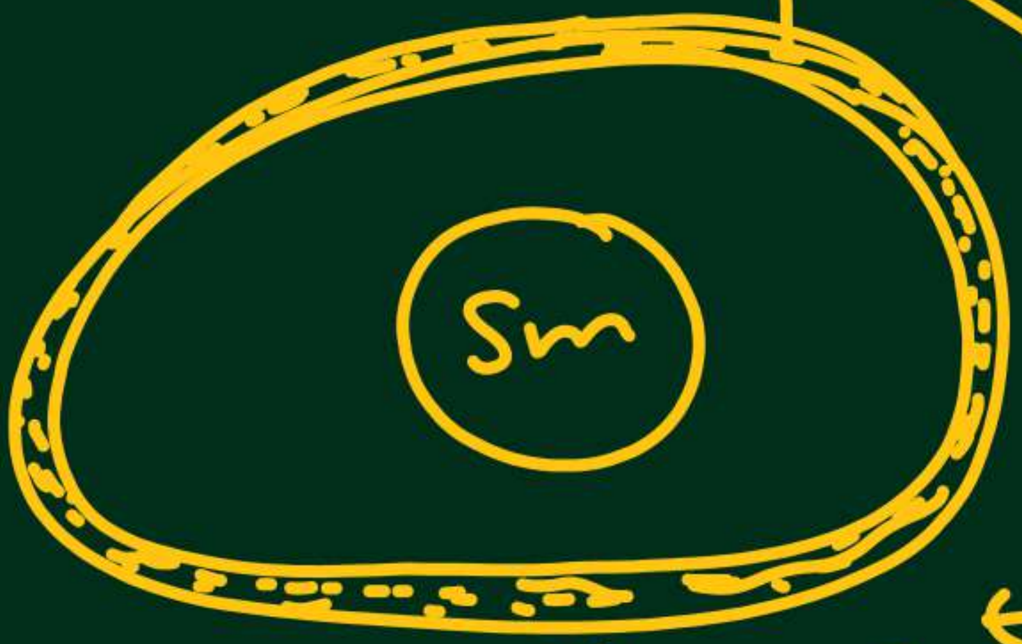
Sun attracted the Dust Particles and Gases.

सूर्य ने धूल कणों, गैसों को अपनी तरफ आकर्षित किया।

के समीप से गुजरा।

Dust Particles

Gases.



कालांतर में

After some time

धूल कण, गैस ग्रह व उपग्रह का निर्माण।

अंतरतारकीय परिकल्पना 1943)

- According to this theory, **the initial universe comprised of stars & randomly distributed matter filling up the space in between**.

- According to Schimidt, **this dark matter, started to revolve around the primitive rotating sun** and gradually the dark matter stars **accreting & condensing** & thus **forming the solar system.**

- इस सिद्धांत के अनुसार, **प्रारंभिक ब्रह्मांड में तारे और उनके बीच की जगह को भरने वाले बेतरतीब ढंग से वितरित पदार्थ शामिल थे** ।

- शिमिड्ट के अनुसार, **यह डार्क मैटर, आदिम घूमने वाले सूर्य के चारों ओर घूमना शुरू कर दिया** और धीरे-धीरे डार्क मैटर तारे **एकत्रित और संघनित हुए** और इस प्रकार **सौर मंडल का निर्माण हुआ।**