Herbig AeBe stars

Properties of this type of stars and a summary of modern research on magnetic fields, spectroscopy and X-Ray measurements.

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Herbig AeBe stars

- Introduction
- Recognition
- Herbig AeBe versus T-Tauri stars
- Current research
  - Magnetic field
  - Spectroscopy
  - X-Ray research
- Conclusion

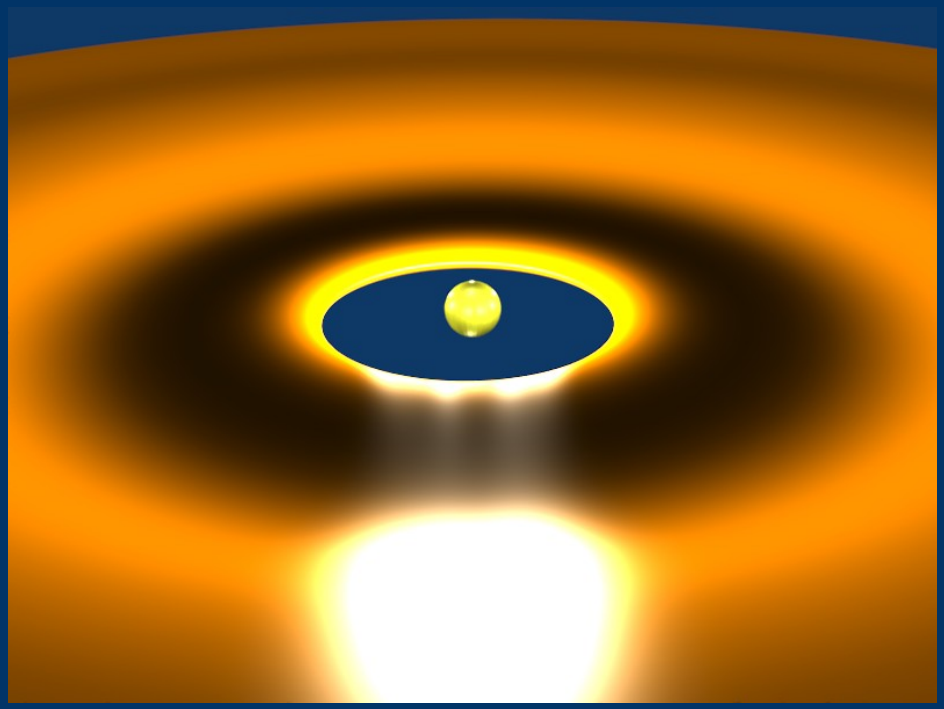
Introduction

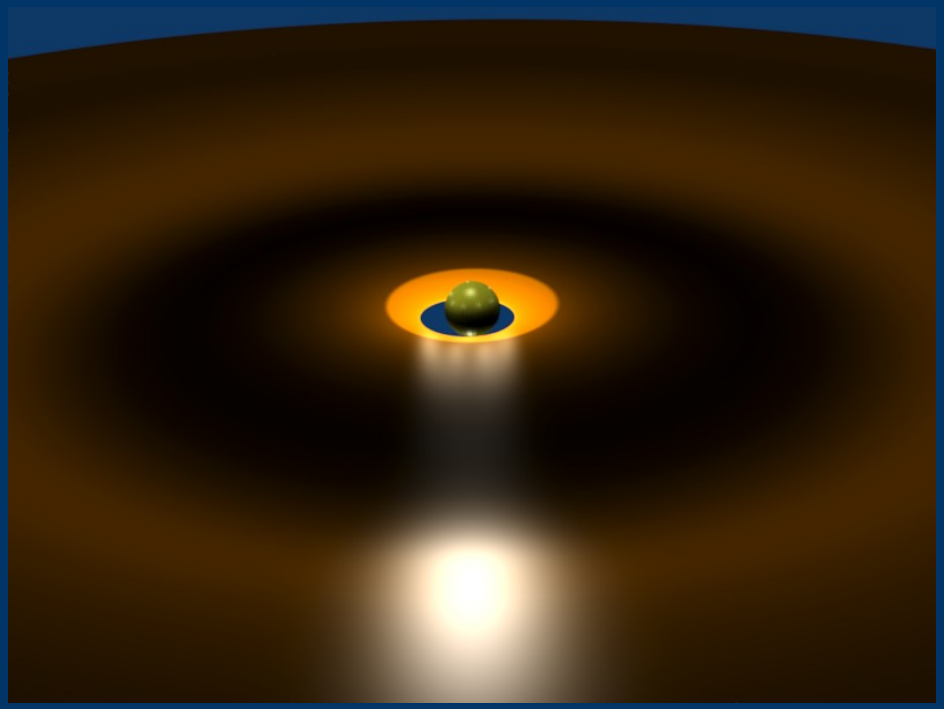
- Star formation
  - Cloud collapse
  - Heat produced
- Types of protostars
  - Mass
    - Light mass T-Tauri
    - Medium massed Herbig AeBe star
    - Very heavy protostar

How to recognize an Ae/Be star

- Infrared
  - Strong radiation in the infrared part of the spectrum
- Spectroscopy
  - Dust
  - Gas

T-Tauri versus Herbig Ae/Be





Herbig AeBe versus T-Tauri

- Mass
  - Herbig AeBe stars have higher mass
- Dust
  - T-Tauri stars have relatively little dust
- Development lifetime
  - T-Tauri stars develop less fast
- Grouping
  - The heavier a star is, the more likely it is to have close stellar companions.

Current research

- Magnetic field research
  - Do Herbig AeBe stars magnetic fields and what is causing them?
- Spectroscopy of dust disk
  - Understanding planet formation
- X-Ray research
  - Some Herbig AeBe stars are sending out X-Rays
  - Cause of X-Rays still unknown.

Magnetic Field research

- Magnetic field detection
  - Magnetic particles line up to magnetic field
  - Light polarizes due to magnetic particles
- Magnetic field effect
  - Magnetic fields are believed to be one of the reasons of planet formation

Spectroscopy

- Detection of Herbig AeBe stars
- Detection of Magnetic Fields
- Detection of different elements
  - Formation of different types of
    - Large amounts of H2 necessary for formation of gas giants
    - Amounts of iron and other heavier elements necessary for other type of planet formation

X-Ray research

- Some Herbig AeBe stars exhibit X-ray transmission
  - Dynamo effect
  - Stellar winds hitting gas
  - Residual magnetic field

References

- Magnetic Fields research
  - “Accurate magnetic field measurements of Vega-like stars and Herbig AeBe stars” Hubrig, Yuding, Schoeller, Pogodin (Astronomics and Astrophysics, 2006)
- X-Ray research
  - “On the origin of Herbig AeBe stars” Stelzer, Micela, Hamaguchi, Schmitt (Astronomics and Astrophysics, 2006)