the birth of binary stars

- Surveys have shown that binary stars are as common in young clusters of stars and protostars as they are in the solar neighbourhood, implying that binaries are formed during the star formation process.
- Stars form from the collapse of giant gas clouds of molecular hydrogen which populate the spiral arms of our galaxy.
- Computer simulations of the gravitational collapse of a molecular cloud indicate that if the cloud rotates faster than a critical rate of approximately one revolution every two million years, the cloud will fragment into binary protostars with highly eccentric orbits.
- This prediction is confirmed by observations, which show that about half of the observed dense cloud cores rotate faster than the critical rate and so will likely go on to form binary protostars.