 **Key points:** This paper investigates the formation of habitable planets in binary star systems, where the primary star hosts a Jupiter-like planet. It focuses on how the secondary star's motion affects the formation and water content of Earth-like planets in the habitable zone.

 **Important formulas or discoveries:** The study uses the following formula to determine the stability of a giant planet's orbit in a binary system:

a\_c = a\_b [0.464 - 0.380\mu + (0.631 - 0.586\mu)e\_b + (0.150 - 0.198\mu)e\_b^2]

where ac​ is the critical semimajor axis for stability, ab​ and eb​ are the semimajor axis and eccentricity of the binary companion, and μ is the mass ratio of the stars.

 **Limitations:** The study assumes that terrestrial planet formation in binary systems follows a similar process to that around single stars and that giant planets have already formed. It also simplifies the water delivery process by considering only protoplanetary objects.

 **Summary:** The study concludes that Earth-like planets with substantial water can form in the habitable zones of binary systems. The formation and water content of these planets depend on the binary's separation and the eccentricity of the secondary star. Binaries with moderate to large perihelia and giant planets in low-eccentricity orbits are more favorable for habitable planet formation.