

# Magnetic fields of binary stars

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Investigation of the magnetic fields on stars is important because they affect many different properties of stars at multiple stages of their evolution. The magnetic field is also a key component in the interaction between the star and its surroundings, possibly affecting habitability. The study of binaries offers a unique opportunity due to the fact that the formation of the components are simultaneous and from the same protostellar cloud. This makes it possible to study the effects of magnetic fields while also reducing the effect other stellar parameters have on the result.

Magnetic fields on stars are studied over multiple spatial scales, giving insight into different properties of the magnetic field on the star. Investigations of the different spatial scales are performed with separate methods that utilize different ways the magnetic field affects stellar spectra. Zeeman Doppler Imaging (ZDI) can be used to investigate larger scales with spectropolarimetric observations. This provides a tomographic map of the surface magnetic field. To probe smaller scales, Zeeman broadening (or intensification) uses changes in shape and equivalent width of magnetically sensitive spectral lines to find the global average small-scale fields.

Here results of recent magnetic field studies on binaries are presented. These results include both investigations of small- and large-scale magnetic fields in order to build more complete pictures of stellar magnetic fields.

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