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## The Active Chromospheres of Lithium-Rich Red Giant Stars (R)

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We have discovered an unexpected observational feature of the rare lithium-rich G-K red giants: many have very strong neutral helium 10830 A absorption transitions in their spectra. While over 90% of normal lithium-poor giants have weak He I absorption lines, more than half of the lithium-rich stars have deep, very broad 10830 features. The noble gas helium cannot generate detectable spectroscopic absorption in the photospheres of cool red giants; any 10830 A feature must arise in hot, disturbed outer chromospheres of these stars. Almost all lithium-rich, helium-active giants appear to be red clump objects; very few seem to be on the first-ascent red giant branch. The Li-He combination most probably results from lithium generation and envelope mixing during the otherwise unobservable helium flash. The Li-rich, He-strong stars are ones who must have experienced this internal cataclysm relatively recently. They probably are "young" helium-burning horizontal branch stars whose outer envelopes are trying to recover from the helium flash.

## Session

Stellar observations (photometry and spectrometry)

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Session Classification: Stellar Observations