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Catastrophic Fermi surface reconstruction in the shape-memory alloy AuZn PAUL GODDARD, JOHN SINGLETON, ROSS MCDONALD, NEIL HARRISON, JASON LASHLEY, National High Magnetic Field Laboratory, Los Alamos National Laboratory, USA, HISATOMO HARIMA, MICHI-TO SUZUKI, Kobe University, Japan — AuZn undergoes a shape-memory transition at 67 K. An abrupt change in the quantum oscillations is observed at this temperature, indicating a disintegration of the Fermi surface associated with the transition. The de Haas-van Alphen effect is measured above and below the transition, at temperatures up to 100 K, and is in reasonable agreement with band-structure calculations in both the high and low-temperature phases. The measurements are strongly suggestive of an inherent, bulk phase separation at low temperatures. In addition, a Dingle analysis reveals a sharp change in the scattering mechanism at a certain cyclotron radius. Both these observations are indicative of the characteristic microstructure that drives the shape-memory effect.

Paul Goddard

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