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Magnetic field effects in π-conjugated polymer/fullerene blends; evidence for multiple components[1] FUJIAN WANG[2], Department of Physics and Astronomy, University of Utah, HEINZ BÄSSLER, Department of Chemistry, Philipps-Universität Marburg, Z. VALY VARDENY, Department of Physics and Astronomy, University of Utah — We studied magnetoconductance (MC) in organic diodes of blends of π-conjugated polymers and fullerene molecules at various concentrations, c. The MC response is composed of several components that depend on the applied bias voltage and c. A dominant positive low-field (LF) component, which also governs the magneto-electroluminescence response dramatically decreases and broadens with c, thus unraveling a negative LF and positive high-field (HF) components. Our results attest that the positive LF component is caused by Coulombically bound electron-hole (e-h) pairs in the active layer. This is confirmed by studying MC in electron- and hole-unipolar devices, which shows small negative LF that might be due to e-e and h-h pairs (bipolaron), respectively; but lacks the positive LF component.

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