**Bound states of fermions with short-range interactions in
the presence of spin-orbit coupling and Zeeman fields** DOGA MURAT
KURKCUOGLU, PhD Student, C. A. R. SA DE MELO, Professor — We dis-
cuss the emergence of two-particle bound states of spin-1/2 fermions in the presence
of Zeeman fields for arbitrary mixtures of Dresselhaus and Rashba spin-orbit cou-
plings, under the assumption that interactions are short-ranged and occur only in
the s-wave channel. In this case, we calculate explicitly binding energies and effec-
tive masses and analyze their dependence on spin-orbit couplings, Zeeman fields and
interactions. Finally, we note that such exact two-body results serve as important
benchmarks for the construction of many-particle wavefunctions that recover the
few-particle regime in the low density limit.

Doga Murat Kurkcuoglu
PhD Student

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