

Search or Article-id (Help | Advanced search) arXiv.org > cond-mat > arXiv:1107.0891 All papers Go! Ŧ Condensed Matter > Strongly Correlated Electrons Download: PDF Gauge invariance, correlated PostScript Other formats fermions, and Meissner effect in Current browse context: 2+1 dimensions cond-mat.str-el < prev | next > new | recent | 1107 Jonas de Woul, Edwin Langmann Change to browse by: (Submitted on 5 Jul 2011) cond-mat math We present a 2+1 dimensional quantum gauge theory model with correlated math-ph fermions that is exactly solvable by bosonization. This model gives an effective description of partially gapped fermions on a square lattice that have density-**References & Citations** density interactions and are coupled to photons. We show that the photons in NASA ADS this model are massive due to gauge-invariant normal-ordering, similarly as in the Schwinger model. Moreover, the exact excitation spectrum of the model Bookmark(what is this?) has two gapped and one gapless mode. We also compute the magnetic field 📃 💿 🗶 🔂 🖬 🖬 🗐 🥸 induced by an external current and show that there is a Meissner effect. We find that the transverse photons have significant effects on the low-energy properties of the model even if the fermion-photon coupling is small.

Comments:8 pages, 1 figureSubjects:Strongly Correlated Electrons (cond-mat.str-el);
Mathematical Physics (math-ph)Cite as:arXiv:1107.0891 [cond-mat.str-el]
(or arXiv:1107.0891v1 [cond-mat.str-el] for this version)

Submission history

From: Jonas de Woul [view email] [v1] Tue, 5 Jul 2011 14:58:55 GMT (197kb)

Which authors of this paper are endorsers?

Link back to: arXiv, form interface, contact.