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**Time-dependent spin-wave theory**[1] ANDREAS KREISEL, ANDREAS RÜCKRIEGEL, PETER KOPIETZ, Institute for Theoretical Physics, University of Frankfurt, Germany — We generalize the spin-wave expansion in powers of the inverse spin to time-dependent quantum spin models describing rotating magnets or magnets in time-dependent external fields. We show that in these cases the spin operators should be projected onto properly defined rotating reference frames before the spin components are bosonized using the Holstein-Primakoff transformation. As a first application of our approach, we calculate the re-organization of the magnetic state due to Bose-Einstein condensation of magnons in the magnetic insulator yttrium-iron garnet; we predict a characteristic dip in the magnetization which should be measurable in experiments.

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