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Adiabatic Spin Pump through an Antiferromagnetic Molecular Magnet¹ JIE GU, XIANGGUO LI, HAI-PING CHENG, X-G ZHANG, Univ of Florida - Gainesville — We propose an adiabatic spin pump through an antiferromagnetic molecular magnet connected to two nonmagnetic electrodes. This molecule has spin-dependent charging energies, which open a new possible way of generating spin currents without requiring a magnetic field, ferromagnetic leads, or spin-orbit coupling. Making use of the quantum master equation approach combined with full counting statistics, we show that under certain conditions, applying periodically oscillating voltages to this molecular magnet can generate highly polarized spin currents and pure spin currents. Negative differential resistance (NDR) is also predicted.

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