



Quantum Dragon Nanodevices

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Application

Field effect transistors and other optoelectronic devices based on unit electron transmission

Key Benefits

- **Transistors with enhanced electron transmission enable electronic devices to operate more efficiently**
- **Reduced generation of heat in operation**
- **May be constructed of a variety of low-cost materials to produce more efficient integrated circuits, memory chips, microprocessors and other optoelectronic devices**

Market Summary

Field effect transistors are necessary components in a range of electronic devices such as smartphones, digital cameras, computers, and automotive electronics. The entire semiconductor and circuit manufacturing industry is projected to grow in the five years to 2020, driven by growing demand for new semiconductor technology and the increasing complexity and ubiquity of computer systems. In the five years to 2020, industry revenue is expected to increase at an annualized 1.7% to \$61.9 billion.

Technology Summary

Quantum dragon nanodevices have total transmission of electrons for a wide range of electron energies, even though there is strong scattering so the electrons do not undergo ballistic propagation. Total electron transmission is achieved through optimizing and tuning lead connections to the nanodevice. This enables highly efficient field effect transistors, sensors, injectors for spin polarized currents, and wires with zero or minimal electrical resistance. The quantum dragon devices may be made of a variety of low-cost particles that are compatible with traditional transistor manufacturing techniques.

Development Stage: Product concept

IP Protection: Pending PCT Application No. PCT/US15/00114

Inventor Mark A. Novotny: <http://newton.ph.msstate.edu/~novotny/index.html>

