

e-Learning systems, Analysis of the Acoustical Environment Space, Condensed matter physics



Nobuyuki OGAWA

Professor, Dr. Eng.

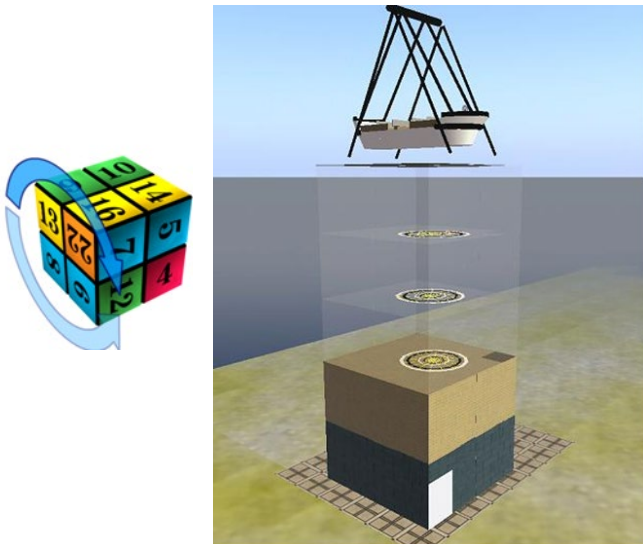
Email : ogawa@gifu-nct.ac.jp

Research Fields High-speed computing , Simulation, Solid State Physics

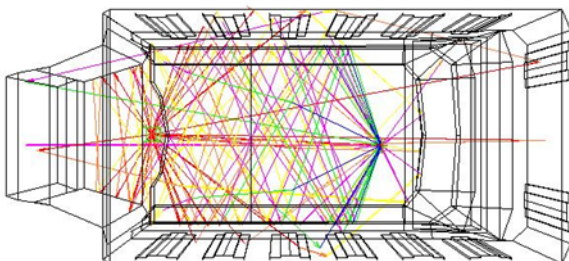
Keywords e-Learning, Concert hall, Superconductivity , Quantum Spin Systems

● Research Outline

e-Learning systems

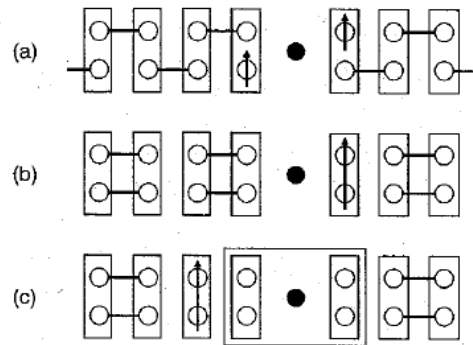


Analysis of the Acoustical Environment Space



Boston Symphony Hall
Temperature 24 °C, humidity 60%

Quantum Spin Systems



VBS pictures around the impurity site.

(a) The picture in the case where the ground-state phase of the host antiferromagnetic $S=1$ bond-alternating chain is the Haldane phase and $|J_i| \ll J$. (b) and (c) The pictures in the case where it is the dimer phase; (b) and (c) are, respectively, for $|J_i| \ll J$ and $J_i \rightarrow -\infty$. The solid and open circles stand, respectively, for the $S=1/2$ impurity spins and the $S=1/2$ variables. Two $S=1/2$ variables connected by the solid line form a singlet pair. Each small rectangle surrounding two $S=1/2$ variables and a large rectangle surrounding the $S=1/2$ impurity spin and its adjacent $S=1$ host spins represent, respectively, operations of constructing an $S=1$ spin and an $S=5/2$ spin by symmetrization. The short and long arrows denote, respectively, $S=1/2$ and $S=1$ degrees of freedom.