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Nuclear Resonances at Zero and Finite Temperatures NGUYEN DINH DANG, Cyclotron Center RIKEN 2-1 Hirosawa - Wako city - 351-0198 Saitama, Japan — The theoretical description of nuclear resonances at zero and finite temperatures is discussed, which includes 1 – giant dipole resonances (GDR) in highly excited nuclei, including both low and high regions of temperature; 2 – multiple-phonon resonances in relativistic Coulomb excitations; 3 – pygmy dipole resonances in neutron rich nuclei within the framework of the phonon-damping model [1]. The theoretical predictions are put in direct comparison with the most recent experimental data. In particular, in (1) the role of thermal pairing in the description of the GDR width at low temperature T=1 MeV in the latest experiment using O-17 scattered inelastically on Sn-120 will be discussed in detail [2]; in (2) the emphasis will be put on the double GDR in Xe-136 and Pb-208, where a large enhancement is seen as compared to the prediction by the independent phonon picture; in (3) the effect of pairing and coupling of GDR to complicated configurations on the pygmy dipole resonances is be analyzed.

References:
[1] N. Dinh Dang, and. A. Arima, Phys. Rev. Lett. 80, 4145 (1998), Nucl. Phys. A 636, 427 (1998).
[2] N. Dinh Dang and A. Arima, Phys. Rev. C 68 (2003) 044303.

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