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Open quantum systems DAVID MAYETT — I analyzed a particular quantum system, which I called cross array. At first, I analyzed the stationary states and energies of specific cases: the system was closed and the number of cells per branch was N=1 and N=2. Consequently, I generalized the case for an arbitrary number of cells per branch. In doing so, I was then able to study cases where some channels were open to the continuum. The properties of these open quantum systems were described by the use of discretized effective non-hermitian Hamiltonian. I studied a keen transition between the weak and strong coupling regimes. The weak coupling limit produced well- the decay widths were collected and Dicke states were formed.

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