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Fermi two atom problem in extended Fredrichs-Lee Model KAVAN MODI, JAMES ZABEL, GEORGE SUDARSHAN, The University of Texas at Austin — In 1932 Fermi calculated the time required for excitation transition between two atoms. He found the minimum time to be the distance between the atoms divided by the speed of light. Recently, Hegerfeldt, using a very basic argument of analyticity of the wavefunction, showed that the excitation amplitude of the second atom must be finite for all times or zero for all times. We are studying this problem in detail using a modified Fredrichs-Lee model where two discrete states are connected by a continuum. We can solve for the transition amplitude exactly in our model, without assuming that a photon is the mediator between the two discrete modes. Our model should shed some light on the conceptual difficulties that have bothered the community for long.

Kavan Modi
The University of Texas at Austin

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