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**Investigations of the  $40\text{cm}^{-1}$  mode in hexacoordinated ferric heme systems** FLAVIU GRUIA, XIONG YE, PAUL CHAMPION, Northeastern University — The  $40\text{cm}^{-1}$  mode dominates the low frequency spectra of most hexacoordinated ferric heme systems investigated to date. For a better understanding and assignment of this mode we have measured the FCS excitation profile of cyanide bound myoglobin, which shows this feature particularly well. We observe a very interesting behavior of the initial phase and the amplitude of this mode which do not fit within the existent theoretical models. The experimental results could be explained if we postulate the existence of a fast non-radiative transition between the nuclear excited and the ground states. There are also arguments that support the existence of a charge transfer band that underlies the Soret band.

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