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Abstract. With the increasing integration of mechanical, electrical and hydraulic components in advanced engineering systems, the integrated analysis of coupled physical phenomena and coupled technical systems gets more and more important. The methods and software tools of multibody dynamics are used successfully as integration platform for these multidisciplinary investigations. The present paper summarizes some multidisciplinary applications in the context of multibody dynamics and considers common problems and solution strategies. A novel modal multifield approach for coupled field effects like thermoelasticity is discussed in more detail.

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