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Sommario/riassunto	Most metallic components and structures are subjected, in service, to random or variable amplitude loadings. There are many examples: vehicles subjected to loadings and vibrations caused by road irregularity and engine, structures exposed to wind, off-shore platforms undergoing wave-loadings, and so on. Just like constant amplitude loadings, random and variable amplitude loadings can make fatigue cracks initiate and propagate, even up to catastrophic failures. Engineers faced with the problem of estimating the structural integrity and the fatigue strength of metallic structures, or their propensity to fracture, usually make use of theoretical, numerical, or experimental approaches. This reprint collects a series of recent scientific contributions aimed at providing an up-to-date overview of approaches and case studies-theoretical, numerical or experimental-on several topics in the field of fracture, fatigue strength, and the structural integrity of metallic components subjected to random or variable amplitude loadings.