

<<极端条件下结构完整性与材料老化>>

图书基本信息

书名：<<极端条件下结构完整性与材料老化>>

13位ISBN编号：9787562829065

10位ISBN编号：7562829063

出版时间：2010-10

出版时间：涂善东、王正东、薛昌明 华东理工大学出版社 (2010-10出版)

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页数：427

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## 章节摘录

插图：Fig. 8 represents the growths of crack size with the time. Both of the crack depth and half crack length increases steadily with the increasing time. The half crack length shows a sudden increase when the coalescence of the cracks occurs. In the end of the whole simulation, the growths of crack size are accelerated by the dramatical increment of the  $C^*$ -integral, as shown in Fig. 9. In this figure, the variation of the maximum  $C^*$ -integral is plotted against the time, which represents almost the same trend as those of crack size. In an engineering assessment for FFS, the interaction of multiple cracks is taken into account by applying combination rules, as listed in Table 2. According to the crack coalescence criteria of the standards, each crack is assumed to grow in isolation before the coalescence; when the distance of cracks satisfied the prescribed condition, adjacent cracks will join together. Hypotheses are proposed that the depth of the newly formed crack is equal to the depth of the deeper of the two pre-existing cracks and the surface length is equal to the sum of their lengths and minimum distance. When FE method is inaccessible, the propagation of multiple creep cracks can be predicted by utilizing the combination rules together with the  $C^*$ -integral estimating methods, more especially, the reference stress methods.

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