Fatigue Life Evaluation of Aged Rails Focusing on The Occurrence State of Hanging Sleepers and Rail-Head Surface Irregularities

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This study analyzed the gap under hanging sleepers and the surface irregularities of rail heads obtained on the operating railway track, which affect the fatigue life of aged rails. Fatigue tests were conducted on aged rails exhibiting surface irregularities and on aged rails with a history of being laid on hanging sleepers. On the basis of the fatigue test result, we proposed a quantitative evaluation method for the safety and control value of aged rails for extended use. This method reflects the probability of hanging sleepers, as well as the variability of the fatigue strength of aged rails.