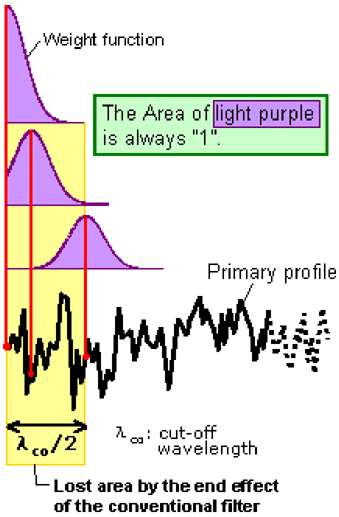
Application of Robust Gaussian Regression Filter to Evaluation of Surface Roughness of Hardwood

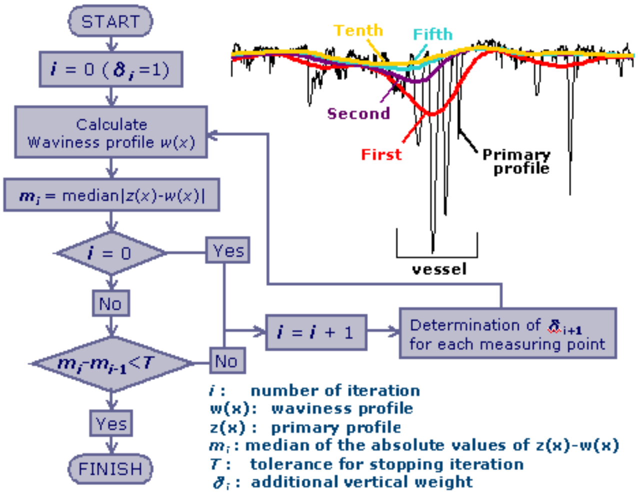
The conventional filter of JIS and ISO for the evaluation of surface roughness has two disadvantages: 1.End effect, 2. Ghost peaks are generated near deep valleys. The Robust Gaussian Regression filter can solve these two problems. In this study, we try to apply this filter for evaluating the surface roughness of sanded hardwood.

Filtering process for Robust Gaussian Regression Filter



← Fig.1
Change of the shape of weight function

Fig.2 →
Algorithm of filtering process



Profiles obtained by Robust Gaussian Regression Filter(GR0)

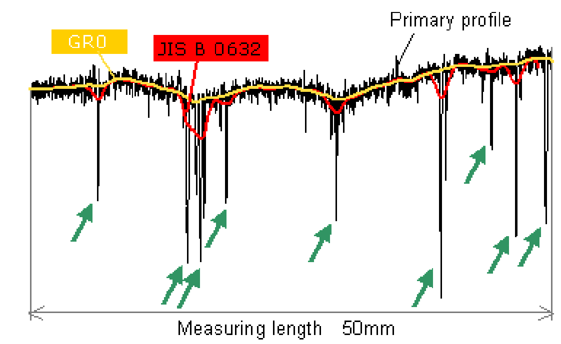


Fig.3 Waviness profiles obtained by JIS B 0632 and GR0 (Sanded surface of Japanese Oak:P240)

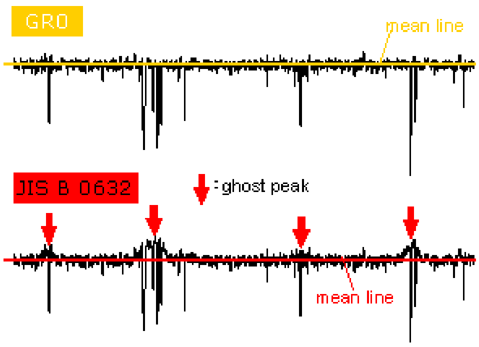


Fig.4 Roughness profiles obtained by JIS B 0632 and GR0 (Sanded surface of Japanese Oak:P240)

Relationship between grit numbers of coated abrasives and R_a or R_{pk}

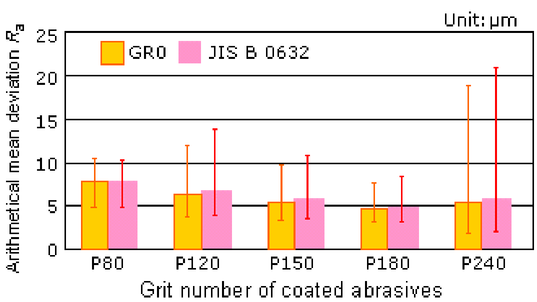


Fig.5 Relationship between grit numbers of coated abrasives and Ra (Sanded surface of Japanese Oak:P240)

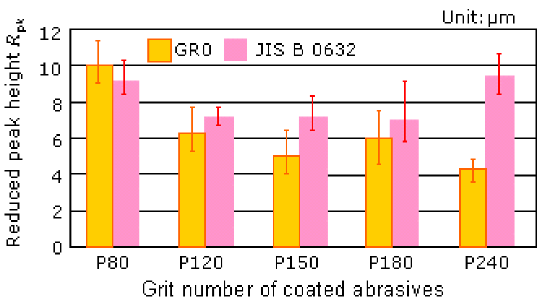


Fig.6 Relationship between grit numbers of coated abrasives and Rpk (Sanded surface of Japanese Oak:P240)