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In recent years, interest environmental protection has become a growing concern worldwide, various new regulations, such as EEDI, have been introduced for vessels. In addition, the International Maritime Organization (IMO) has approved guidelines for reducing underwater radiated noise(URN) from commercial vessels.

Cavitation is one of the main sources of URN from vessels during navigation. It has been reported in previous studies, Hoshino and Oshima (1999) that the wake distribution has an effect on the behaviour of cavitation. When propeller operation in non-uniform flow, the variation of cavitation generated during one revolution of the propeller increases, and UNR also increase with it.

In this paper, in order to investigate the effect of wake distribution on URN, a cavitation test was carried out in the condition which is same amount of generate cavitation using 3 kinds of different wake distribution. In consideration of the test result, this paper proposes a method to take into account the effect of wake distribution in Brown's equation used to estimate the noise level of URN. The effectiveness and validity of the proposed method were discussed in comparison with the measurement results of URN on an actual ship.



Figure 1: Wake distribution

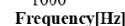


Figure 2: Sound pressure level of each wake

Hoshino, T., Oshima, A.: Propeller cavitation noise and design of low noise propeller, The Journal of the Marine Acoustics Society of Japan, Vol. 26, No. 1, pp.13-23, 1999 (in Japanese)