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PREDICTABLE EXTENSIONS OF GIVEN FILTRATIONS

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Abstract: Filtrations with the property that every stopping time is predictable are of some importance in stochastic analysis, especially in connection with the Girsanov transformation (cf. e.g. Chung and Williams [1]). Presumably for that reason, S. Kwapień stated the problem whether any given filtration can be extended (in a sense defined below) to a filtration for which every stopping time is predictable. In this paper, this problem of Kwapień is solved positively: Any filtration has a predictable extension.

The extension we construct has even the stronger property: any square integrable martingale is a stochastic integral process relative to a certain Brownian motion.

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