



On the Petersson scalar product of arbitrary modular forms

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We consider a natural extension of the Petersson scalar product to the entire space of modular forms of integral weight $k \geq 2$ for a finite index subgroup of the modular group. We show that Hecke operators have the same adjoints with respect to this inner product as for cusp forms, and we show that the Petersson product is nondegenerate for $\Gamma_1(N)$ and $k > 2$. For $k = 2$ we give examples when it is degenerate, and when it is nondegenerate.

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