cases	doc_1		doc_2		decision	id
	authors	• Yuan Xu	authors	• Yuan Xu	NOT DUPLICATES	1907
	title	Approximation and orthogonality in Sobolev spaces on a triangle	title	Approximation by polynomials in Sobolev spaces with Jacobi weight		
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	id	id-5236919614210986073	id	id3174531813228465885		
	abstract	Approximation by polynomials on a triangle is studied in the Sobolev space W_2^r that consists of functions whose derivatives of up to r-th order have bounded L^2 norm. The first part aims at understanding the orthogonal structure in the Sobolev space on the triangle, which requires explicit construction of an inner product that involves derivatives and its associated orthogonal polynomials, so that the projection operators of the corresponding Fourier orthogonal expansion commute with partial derivatives. The second part establishes the sharp estimate for the error of polynomial approximation in W_2^r, when $r = 1$ and $r=2$, where the polynomials of approximation are the partial sums of the Fourier expansions in orthogonal polynomials of the Sobolev space.	abstract	Polynomial approximation is studied in the Sobolev space $W_p^r(w_{\alpha,\beta})$ that consists of functions whose r-th derivatives are in weighted L^p space with the Jacobi weight function $w_{\alpha,\beta}$. This requires simultaneous approximation of a function and its consecutive derivatives up to s-th order with $s \le r$. We provide sharp error estimates given in terms of $E_n(f^{(r)})_{L^p(w_{\alpha,\beta})}$, the error of best approximation to $f^{(r)}$ by polynomials in $L^p(w_{\alpha,\beta})$, and an explicit construction of the polynomials that approximate simultaneously with the sharp error estimates.		
	versions		versions			