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New atomic and molecular decomposition for the variable Triebel-Lizorkin spaces and their growth envelope function

We study unboundedness properties of functions belonging Triebel-Lizorkin spaces with variable norm using growth envelope. A new atomic and molecular decomposition will be given for the variable Triebel-Lizorkin spaces. The atoms, which are defined, has the property, that their variable Triebel-Lizorkin norm are uniformly bounded. This property of the atoms is used to compute the growth envelope function of the variable Triebel-Lizorkin spaces in the sub-critical case. Our results extend the ones for the corresponding classical spaces in a natural way.