

Does fractional smoothness depend on a drift?

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Fractional smoothness in the sense of Besov spaces turned out to be useful in various approximation problems for backward stochastic differential equations and stochastic integrals. The problem of the choice the time-net is often reduced to the finding of the fractional smoothness of the terminal condition of the corresponding problem. We show that, under certain regularity conditions, this smoothness is invariant under a change of the drift of the SDE driving the corresponding approximation problem. This also simplifies the determination of the fractional smoothness under certain circumstances.