

# Nonlocal models : from dune morphodynamics to signal processing

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We will introduce a PDE describing the morphodynamics of sand dunes sheared by a fluid flow. This model involves a non local term which can be seen as a fractional differential operator. The equation is able to describe both erosion and accretion phenomena. The equation can be also applied to signal processing. We will present mathematical results about the well posedness, violation of maximum principle, existence of travelling waves and illustrate this with numerical results.