Global Stabilization for the BBM-KP equations on $\mathbb{R}^2$

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In this talk, we present new results on the asymptotic behavior of the energy for the Ben-jamín-Bona-Mahony-Kadomtsev-Petviashvili (BBM-KP) equations (I and II) posed on the twodimensional plane $\mathbb{R}^2$, with localized damping. The BBM-KP equations, which model wave propagation in fluid dynamics, are studied in the context of energy dissipation. This model provides an alternative to the classical Kadomtsev-Petviashvili (KP) equations, similar to the way the regularized long-wave (RLW) equation offers an alternative to the Korteweg-de Vries (KdV) equation.We analyze the asymptotic behavior of the total energy associated with the Cauchy problem for the BBM-KP equations under the influence of localized damping. Our main result shows that, in the presence of localized dissipation applied to a subdomain of the spatial domain, the energy tends to a steady state as time progresses. Specifically, we investigate the rate at which the energy approaches this asymptotic state, providing insights into the long-term dynamics of the solutions.Work in collaboration with F. A. Gallego (Universidad Nacional de Colombia (UNAL), Colombia) and J.C Muñoz (Universidad del Valle, Colombia)

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