Publicacions més rellevants de la línia de recerca:
Conducció de calor no clàssica

Referència: Quintanilla, R. and Straughan, B. A note on discontinuity waves in type III thermoelasticity. *Proc. Royal Society London A*, **460** (2004), pp. 1169–1175.

Abstract: Two recent nonlinear theories of thermoelasticity, developed by Green and Naghdi, are examined. It is shown that in type II theory, second sound is permissible and both mechanical and temperature waves may propagate. In type III theory we show that the situation is more analogous to that in classical nonlinear thermoelasticity: one wave propagates and a homothermal temperature wave is allowed.

Referència: Leseduarte, M. C. and Quintanilla, R. Thermal stresses in type III thermoelastic plates. *Journal of Thermal Stresses*, **29** (2006), pp. 485–503.

Abstract: We consider the linear theory of homogeneous and isotropic thermoelastic solids for the types II and III theories. First, we present the basic equations which characterize the bending of thin thermoelastic plates. Then, we establish a uniqueness result with no definiteness assumption on constitutive coefficients. Existence of solutions is proved under the assumption that the internal energy density is positive definite; the asymptotic behavior is then analyzed. Finally, we study the spatial behavior of solutions.

Referència: Quintanilla, R. and Straughan, B. Nonlinear waves in a Green-Naghdi dissipationless fluid. *Journal of Non-Newtonian Fluid Mechanics*, **154** (2008), pp. 207–210.

Abstract: We revisit the new theory for a thermoviscous fluid developed by Green and Naghdi [A.E. Green, P.M. Naghdi, A new thermoviscous theory for fluids, J. Non-Newtonian Fluid Mech. 56 (1995) 289-306]. By adopting a different strategy to the constitutive theory we derive a fully consistent thermodynamic theory for a dissipationless fluid. We believe this is more natural than the approach used for a dissipationless flow in Green and Naghdi [A.E. Green, P.M. Naghdi, A new thermoviscous theory for fluids, J. Non-Newtonian Fluid Mech. 56 (1995) 289-306]. A fully nonlinear acceleration wave analysis is sketched for our theory when the wave is entering a region

of equilibrium.