

Mathematics and Fluid Mechanics

The use of distributed-order fractional derivatives in fluid mechanics

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In this work a generalised viscoelastic model based on distributed order derivatives is derived. As in the Maxwell model, the model consists of two distributed-order components (distributed spring-pots) connected in series. If a suitable weighting function of the order of the derivatives is chosen, the new model generalises the fractional viscoelastic model and allows a more comprehensive and accurate description of complex fluids.

References

- [1] FERRÁS, L.L., MORGADO, M.L., REBELO, M, *A generalised distributed-order Maxwell model*, Mathematical Methods in the Applied Sciences, accepted (2022).