

1154-VN-2281      **Victor Churchill\*** ([victor.a.churchill.gr@dartmouth.edu](mailto:victor.a.churchill.gr@dartmouth.edu)). *Identifying damage in sea ice from sparse laser strain measurements.*

We discuss several methods for identifying damage in sea ice when given laser strain or displacement measurements at only a few sparse locations in the domain of interest. We begin by modifying the equations of linear elasticity in order to account for damage in the displacement field. We then present a standard method for solving an inverse problem of this type which minimizes a data misfit cost function that is constrained by the aforementioned partial differential equations. We consider several regularization schemes for this method. Finally, we propose a method which minimizes an unconstrained cost function with respect to two variables via alternating minimization. Our results using both simulated and real data suggest that this method, which allows for variation away from both the given data as well as the model, is promising. (Received September 17, 2019)