**Granular Sea Ice in Engineering Scale**

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This presentation describes the engineering scale ice mechanics research by Aalto University Ice Mechanics group. The work has been based on the use of discrete element method and laboratory- and full-scale experiments. When compared to sea ice dynamics models, one major difference in our modeling approach is that we model the interactions of individual ice features, such as ice blocks or ice floes. For example, we describe an ice pile-up process on the level of individual ice blocks resulting from a simulated failure process of an intact ice sheet. Typical scale of our work has been $1^{-1}…1^{3}$ m, reaching from the work on individual ice blocks and their material properties to modeling of ice floe fields. The presentation also describes our approach for moving towards problems of interest of sea ice dynamics community. Our current 3D discrete element modeling tools are mature enough to tackle problems related ice ridge formation. They may, for example, help in gaining new insight on the parameterization of ice strength in geophysical scale models.