Supporting Information for

**A generalized interpolation material point method for shallow ice shelves.
Part I: shallow shelf approximation and ice thickness evolution**

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Introduction

This supporting information provides the shape functions of the standard and generalized interpolation material point methods.
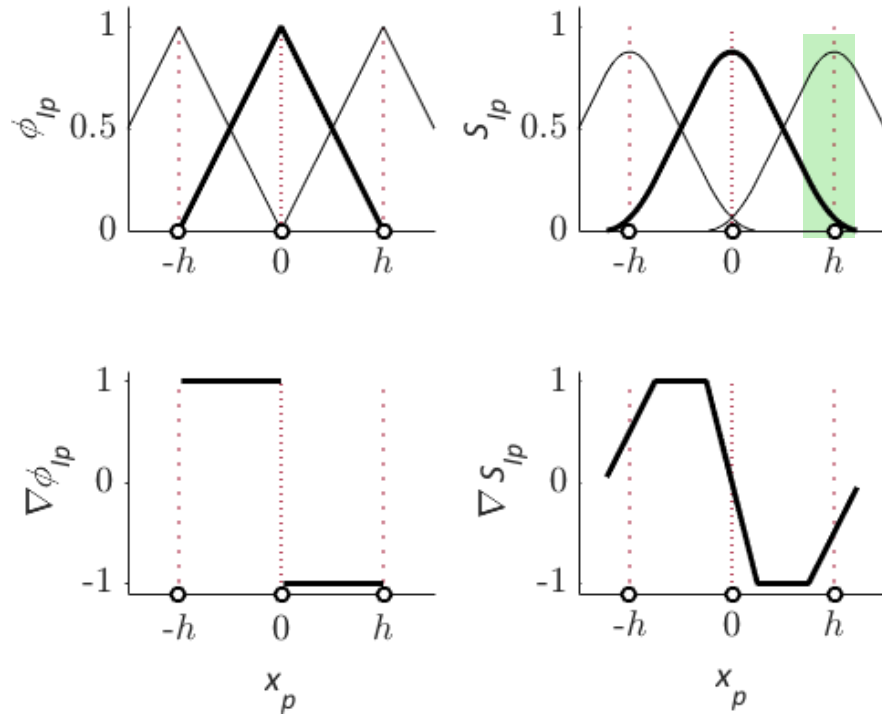
Figure S1. The 1-D sMPM (left) and GIMPM (right) shape functions for a node positioned at $x_i = 0$ with the length of an element given by h. The length of the material point domain used in the GIMPM convolution is $h/2$ (green shading).