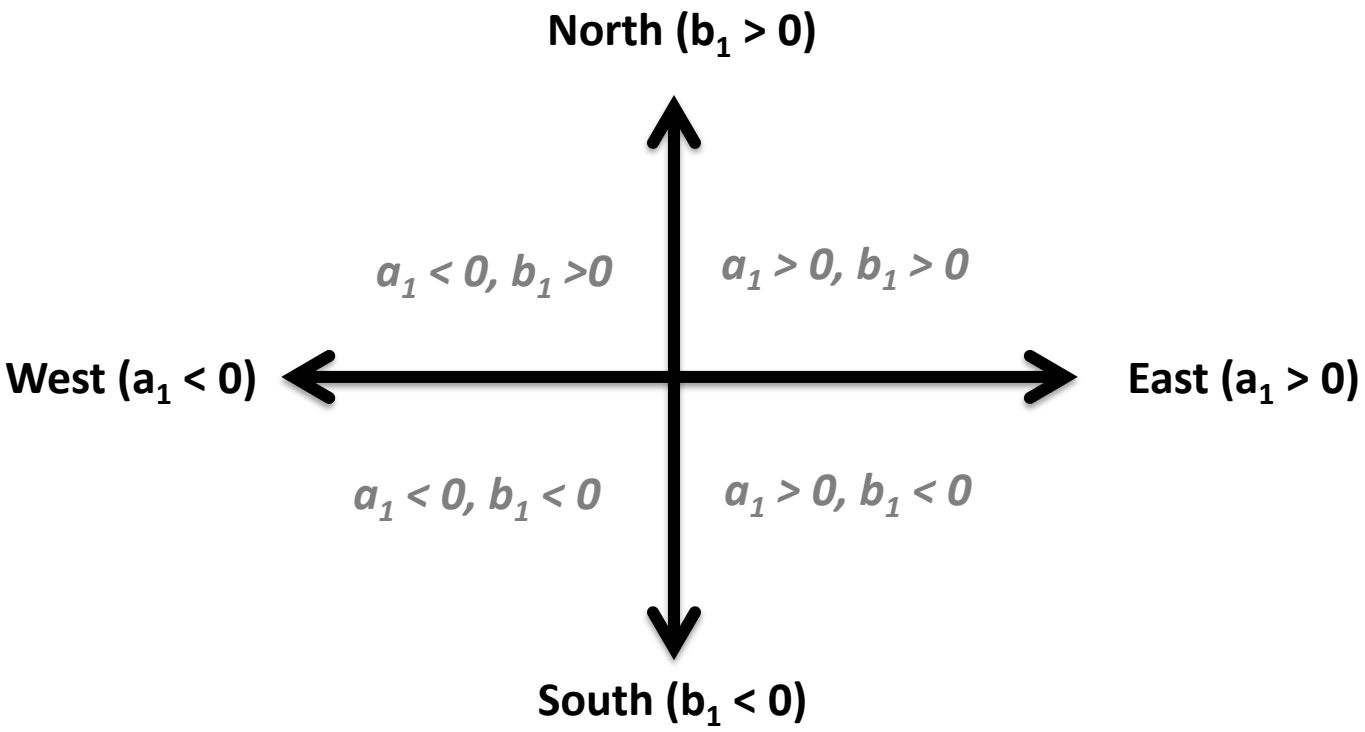
SWIFT directional moments
(in a Cartesian system relative to East)

$a_1 = C_{uz} / E$, using the cospectrum of east velocity *u* and vertical acceleration *z*

$b_1 = C_{vz} / E$, using the cospectrum of north velocity *v* and vertical acceleration *z*

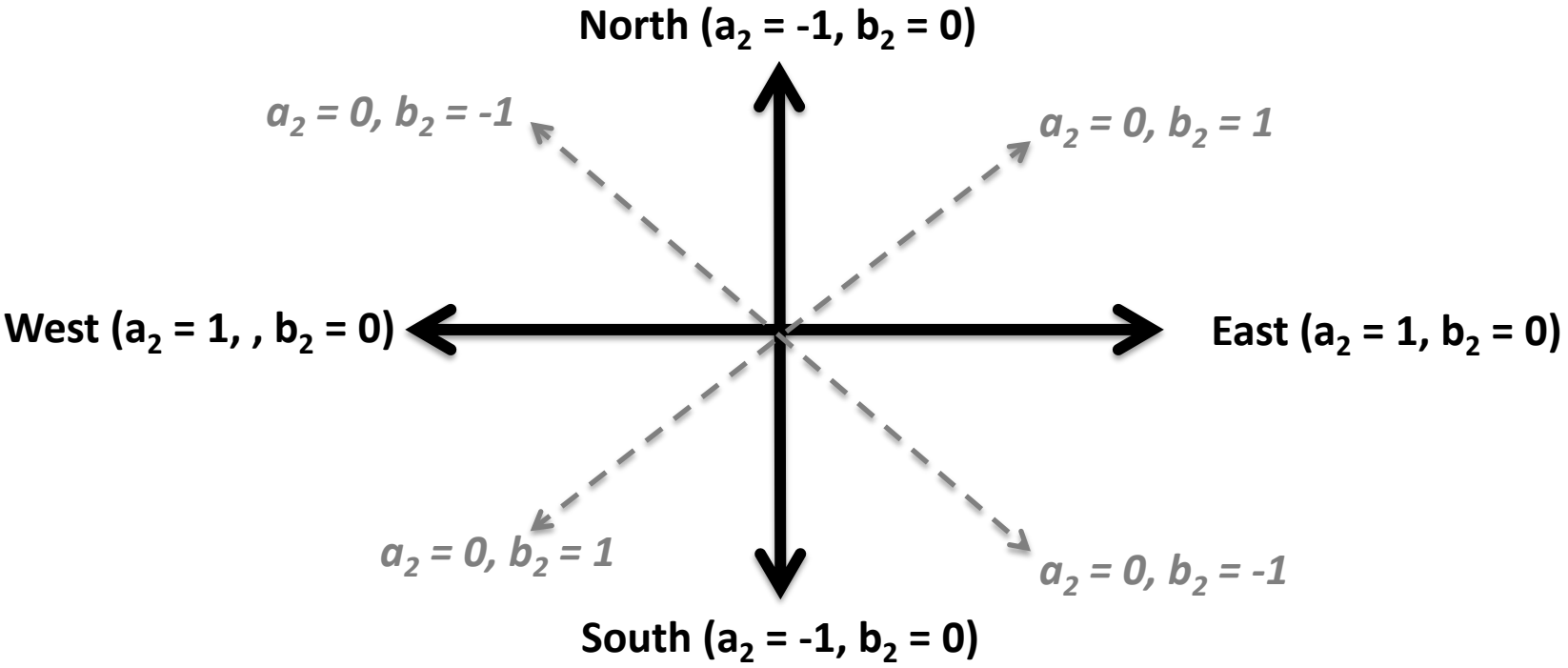


Using the standard $dir_1 = atan2(b_1 , a_1)$ will give the direction that waves are coming from, as a counter-clockwise value relative to east. This must be converted to clockwise (change sign) and made relative to north (add 90 deg) to get an direction in the nautical convention.

SWIFT directional moments
(in a Cartesian system relative to East)

$a_2 = S_{uu} - S_{vv} / E$, using the autospectra of east velocity *u* and north velocity *v*

$b_2 = 2\ C_{uv} / E$, using the cospectrum of east velocity *u* and north velocity *v*



Using the standard $dir_2 = atan(b_2 / a_2)$ will give the direction that waves are coming from, as a coutner-clockwise value relative to east or west. This is only a two quadrant estimate; there is a 180 degree ambiguity. This must be converted to clockwise (change sign) and made relative to north (add 90 degree) to get an direction in the nautical convention…. but the 180 degree ambiguity will remain