Bias а  $\delta_{1p} = 0, \ \delta_{1l} = 0, \ \delta_{2l} = 1, \ \delta_{1h} = 0, \ \delta_{2h} = 1$  $\delta_{1p} = 0, \ \delta_{1l} = \delta_{2l} = 0, \ \delta_{1h} = \delta_{2h} = 0$ 0.10 -0.10 -0.05 -0.05 -0.00 -0.00 l–p h-p h-p b h  $\delta_{1p}=0,\ \delta_{1l}=\delta_{2l}=0,\ \delta_{1h}=\delta_{2h}=6$  $\delta_{1p} = 0, \ \delta_{1l} = 0, \ \delta_{2l} = 1, \ \delta_{1h} = 6, \ \delta_{2h} = 7$ 0.10 -0.10 -0.05 -0.05 -0.00 -0.00 l-p h-p С  $\delta_{1p}=0,\,\delta_{1l}=\delta_{2l}=2,\,\delta_{1h}=\delta_{2h}=6$  $\delta_{1p} = 0, \, \delta_{1l} = 2, \, \delta_{2l} = 3, \, \delta_{1h} = 6, \, \delta_{2h} = 7$ 0.10 -0.10 -0.05 -0.05 -0.00 -0.00 h-p  $\delta_{1p} = 0, \, \delta_{1l} = 4, \, \delta_{2l} = 5, \, \delta_{1h} = 8, \, \delta_{2h} = 9$  $\delta_{1p}=0,~\delta_{1l}=\delta_{2l}=4,~\delta_{1h}=\delta_{2h}=8$ 0.10 -0.10 -0.05 -0.05 -0.00 -0.00 h-p l–p k е some unaligned  $\delta_{1p}=0,\ \delta_{1l}=\delta_{2l}=4,\ \delta_{1h}=\delta_{2h}=8$ some unaligned  $\delta_{1p}=0,\ \delta_{1l}=4,\ \delta_{2l}=5,\ \delta_{1h}=8,\ \delta_{2h}=9$ 0.10 -0.10 -0.05 -0.05 -0.00 -0.00 l–p h-p h-p I-p f cmplt unaligned  $\delta_{1p}=0,\,\delta_{1l}=\delta_{2l}=4,\,\delta_{1h}=\delta_{2h}=8$ cmplt unaligned  $\delta_{1p}=0,~\delta_{1l}=4,~\delta_{2l}=5,~\delta_{1h}=8,~\delta_{2h}=9$ 0.10 -0.10 -0.05 -0.05 -0.00 -0.00 -I-p h-p І-р h-p

Model

MMRM

BJSM

BLPM

**RBLPM**