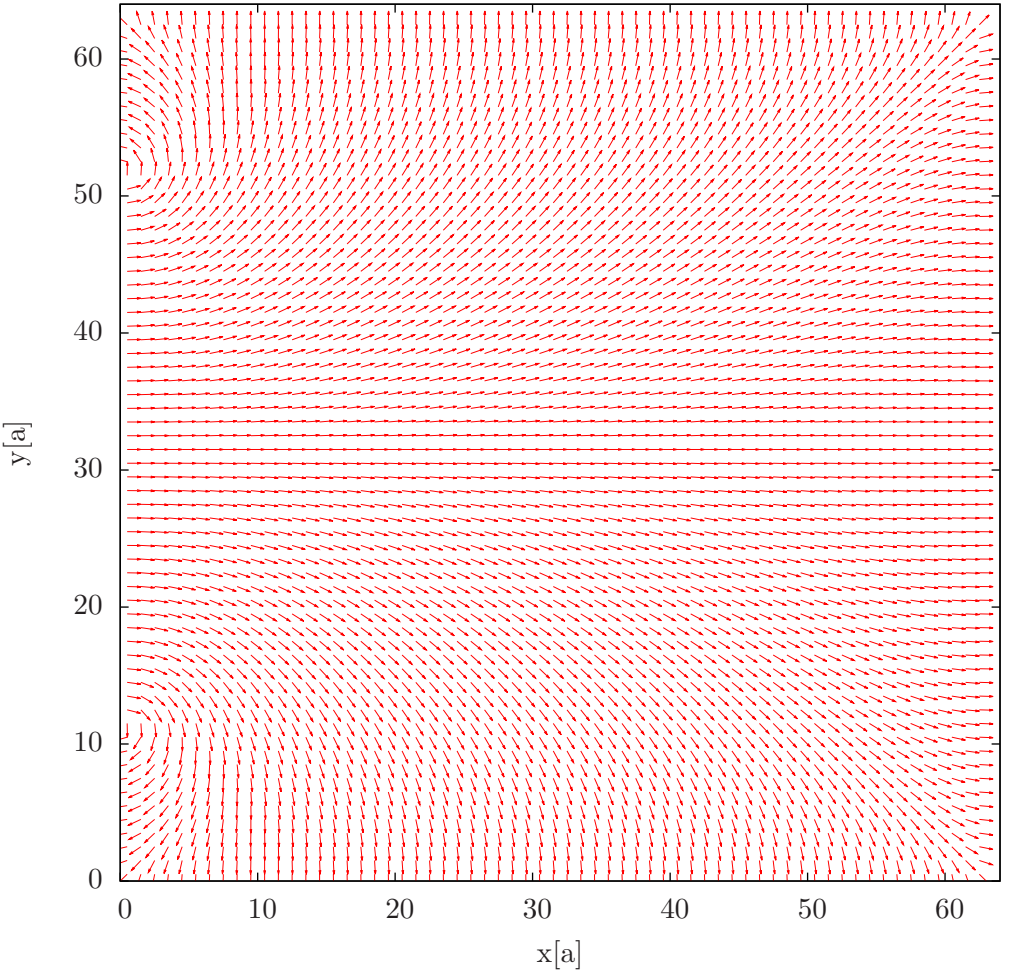$\vec{E}(x, y) = -\nabla\Phi$ at $m = 3$