Tab.1
Summary of ISPH methodology with key references.

Schemes	Formulations	References
Governing equations and pressure solution	$\frac{D\mathbf{u}}{Dt} = -\frac{1}{\rho}\nabla P + \mathbf{g} + \nu\nabla^2\mathbf{u}$ $\nabla\cdot\mathbf{u} = 0$	Shao and Lo (2003)
	$\nabla^2 P_{t+\Delta t} = \alpha\frac{\rho-\rho^*}{\Delta t^2} + (\alpha-1)\frac{\rho\nabla\cdot\mathbf{u}_*}{\Delta t}$	Zheng et al. (2014)
Particle approximations	$\nabla\cdot\mathbf{u}_i = -\frac{1}{\rho_i}\sum_{j=1}^{N} m_j(\mathbf{u}_i - \mathbf{u}_j)\cdot\nabla_i W(\mathbf{r}_{ij})$	Monaghan (1994)
	$\nabla P_i = \sum_{j=1,\, j\neq i}^{N} \frac{n_{i,x_m}B_{ij,x_m} - n_{i,xy}B_{ij,x_k}}{n_{i,x}n_{i,y} - n_{i,xy}^2}(P_j - P_i)$	Ma (2008)
	$\nabla\cdot(\nu_i\nabla\mathbf{u}_i) = \sum_{j=1}^{N} 8m_j\left(\frac{\nu_i+\nu_j}{\rho_i+\rho_j}\frac{\mathbf{u}_{ij}\cdot\mathbf{r}_{ij}}{r_{ij}^2+\eta^2}\right)\cdot\nabla_i W(\mathbf{r}_{ij})$ $\nabla\cdot\left(\frac{1}{\rho^*}\nabla P_{t+1}\right) = \sum_{j=1}^{N} m_j \frac{8}{(\rho_i+\rho_j)^2}\frac{P_{ij}\cdot\mathbf{r}_{ij}}{r_{ij}^2+\eta^2}\cdot\nabla_i W(\mathbf{r}_{ij})$	Cleary and Monaghan (1999)
Solid boundary	$\mathbf{u}\cdot\mathbf{n} = \mathbf{U}\cdot\mathbf{n}$	Liu et al. (2013)
	$\mathbf{u}\cdot\nabla P = \rho(\mathbf{n}\cdot\mathbf{g} - \mathbf{n}\cdot\dot{\mathbf{U}})$	Ma and Zhou (2009)
Free surface	$P = 0$	Zheng et al. (2012)

Note: ρ is the fluid density; $\mathbf{u}$ is the particle velocity; t is the time; P is the particle pressure; $\mathbf{g}$ is the gravitational acceleration; ν is the kinematic viscosity; $\mathbf{u}_*$ is the intermediate particle velocity; ρ^* is the particle density at the intermediate time step; α is the weighting coefficient in PPE source term; Δt is the time step; m is the particle mass; η is the small number to prevent singularity; i and j indicate the reference particle and its neighbours; $P_{ij} = P_i - P_j$, $\mathbf{u}_{ij} = \mathbf{u}_i - \mathbf{u}_j$, $\mathbf{r}_{ij} = \mathbf{r}_i - \mathbf{r}_j$ are defined; $\mathbf{n}$ is the unit normal vector of the solid boundary; $\mathbf{U}$ and $\dot{\mathbf{U}}$ are the velocity and acceleration of the solid boundary; and $W(\mathbf{r}_{ij})$ is the SPH kernel function (cubic B-spline kernel). $n_{i,xy} = \sum_{j=1,\, j\neq i}^{N}(\mathbf{r}_{j,x_m} - \mathbf{r}_{i,x_m})(\mathbf{r}_{j,x_k} - \mathbf{r}_{i,x_k})\Big/\left|\mathbf{r}_j - \mathbf{r}_i\right|^2 W_{ij}$, $n_{i,x_m} = \sum_{j=1,\, j\neq i}^{N}(\mathbf{r}_{j,x_m} - \mathbf{r}_{i,x_m})^2\Big/\left|\mathbf{r}_j - \mathbf{r}_i\right|^2 W_{ij}$; and $B_{ij,x_m} = (\mathbf{r}_{j,x_m} - \mathbf{r}_{i,x_m})\Big/\left|\mathbf{r}_j - \mathbf{r}_i\right|^2 W_{ij}$. More details are in Zheng et al. (2014).