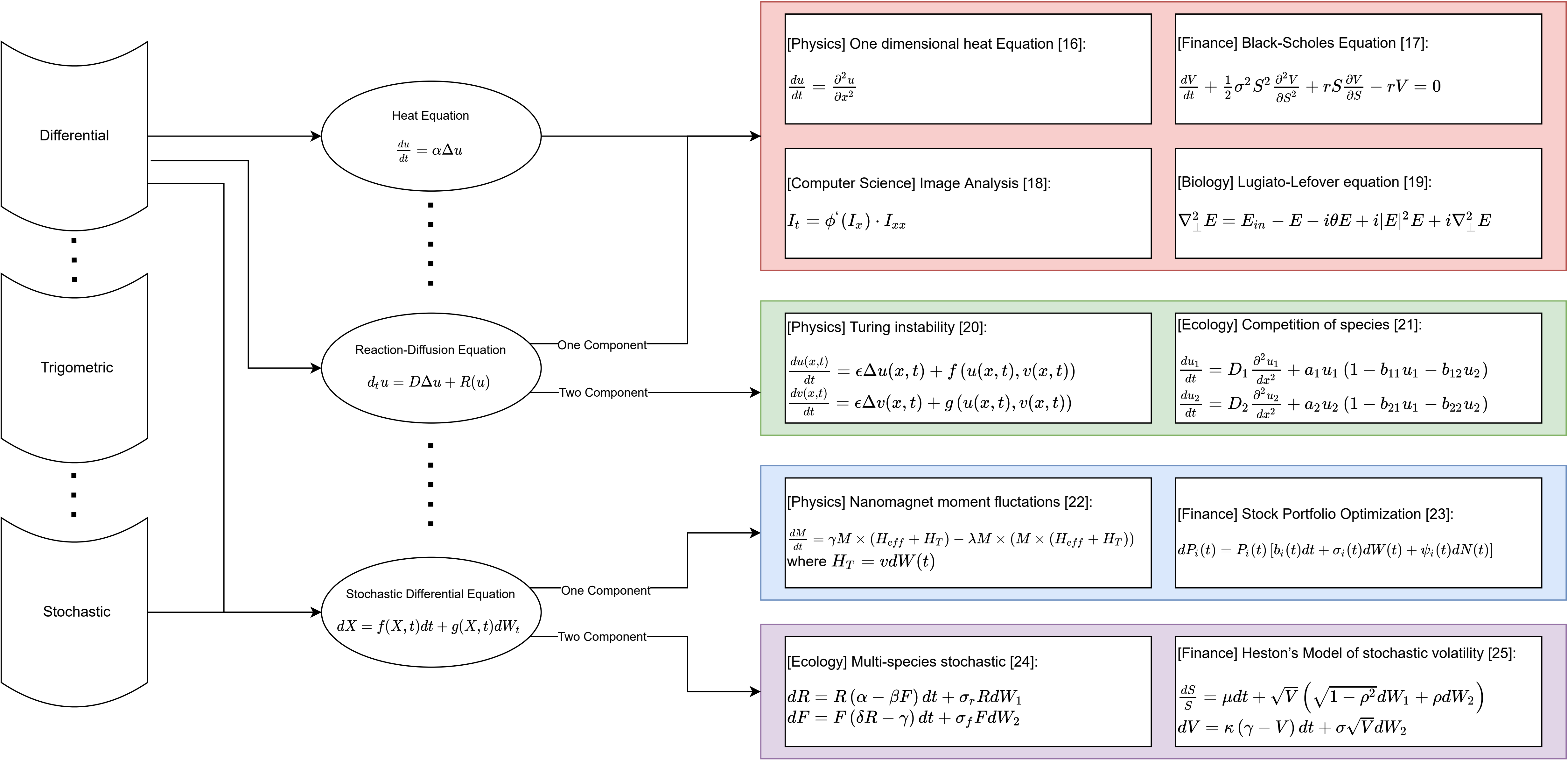

Differential
Trigometric
Stochastic
Heat Equation
$\frac{du}{dt} = \alpha \Delta u$
Reaction-Diffusion Equation
$d_t u = D\Delta u + R(u)$
Stochastic Differential Equation
$dX = f(X,t)dt + g(X,t)dW_t$
One Component
Two Component
One Component
Two Component
[Physics] One dimensional heat Equation [16]:
$\frac{du}{dt} = \frac{\partial^2 u}{\partial x^2}$
[Finance] Black-Scholes Equation [17]:
$\frac{dV}{dt} + \frac{1}{2}\sigma^2 S^2 \frac{\partial^2 V}{\partial S^2} + rS\frac{\partial V}{\partial S} - rV = 0$
[Computer Science] Image Analysis [18]:
$I_t = \phi^{'}(I_x) \cdot I_{xx}$
[Biology] Lugiato-Lefover equation [19]:
$\nabla_\perp^2 E = E_{in} - E - i\theta E + i|E|^2 E + i\nabla_\perp^2 E$
[Physics] Turing instability [20]:
$\frac{du(x,t)}{dt} = \epsilon \Delta u(x,t) + f(u(x,t), v(x,t))$
$\frac{dv(x,t)}{dt} = \epsilon \Delta v(x,t) + g(u(x,t), v(x,t))$
[Ecology] Competition of species [21]:
$\frac{du_1}{dt} = D_1 \frac{\partial^2 u_1}{dx^2} + a_1 u_1 (1 - b_{11}u_1 - b_{12}u_2)$
$\frac{du_2}{dt} = D_2 \frac{\partial^2 u_2}{dx^2} + a_2 u_2 (1 - b_{21}u_1 - b_{22}u_2)$
[Physics] Nanomagnet moment fluctations [22]:
$\frac{dM}{dt} = \gamma M \times (H_{eff} + H_T) - \lambda M \times (M \times (H_{eff} + H_T))$
where $H_T = vdW(t)$
[Finance] Stock Portfolio Optimization [23]:
$dP_i(t) = P_i(t)\left[b_i(t)dt + \sigma_i(t)dW(t) + \psi_i(t)dN(t)\right]$
[Ecology] Multi-species stochastic [24]:
$dR = R(\alpha - \beta F)dt + \sigma_r R dW_1$
$dF = F(\delta R - \gamma)dt + \sigma_f F dW_2$
[Finance] Heston's Model of stochastic volatility [25]:
$\frac{dS}{S} = \mu dt + \sqrt{V}\left(\sqrt{1-\rho^2}dW_1 + \rho dW_2\right)$
$dV = \kappa(\gamma - V)dt + \sigma\sqrt{V}dW_2$