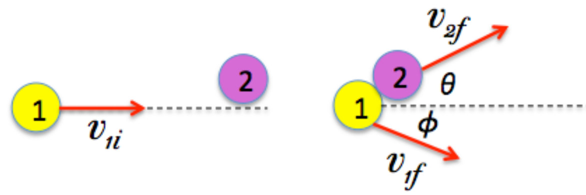
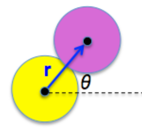
Modeling an elastic collision:



The following must be known: $m_1, v_{1i}, m_2, v_{2i}, \theta$

We can estimate θ by doing $\theta = \arctan\left({}^{r_y}/_{r_x}\right)$,
where r is the vector connecting the center of the spheres.



Unknowns (3): v_{1f}, v_{2f}, ϕ
3 equations needed to solve the problem

conservation of momentum x-direction: $m_1 v_{1i} + m_2 v_{2i} = m_1 v_{1f} \cos\phi + m_2 v_{2f} \cos\theta$ (A)

conservation of momentum y-direction: $0 = m_1 v_{1f} \sin\phi + m_2 v_{2f} \sin\theta$ (B)

conservation of kinetic energy: $m_1 v_{1i}^2 + m_2 v_{2i}^2 = m_1 v_{1f}^2 + m_2 v_{2f}^2$ (C)

$$\frac{B}{A}: \qquad \frac{m_1 v_{1f} \sin\phi}{m_1 v_{1f} \cos\phi} = \frac{-m_2 v_{2f} \sin\theta}{m_1 v_{1i} + m_2 v_{2i} - m_2 v_{2f} \cos\theta}$$

$$\tan\phi = \frac{-m_2 v_{2f} \sin\theta}{m_1 v_{1i} + m_2 v_{2i} - m_2 v_{2f} \cos\theta}$$

A^2: $\quad m_1^2\, v_{1f}^2 \cos^2\phi = [(m_1 v_{1i} + m_2 v_{2i}) - m_2 v_{2f} \cos\theta]^2$

B^2: $\quad m_1^2\, v_{1f}^2 \sin^2\phi = m_2^2\, v_{2f}^2 \sin^2\theta$

$A^2 + B^2$: $\quad m_1^2\, v_{1f}^2 (\sin^2\phi + \cos^2\phi) = m_2^2\, v_{2f}^2 \sin^2\theta + [(m_1 v_{1i} + m_2 v_{2i}) - m_2 v_{2f} \cos\theta]^2$

$$m_1^2 v_{1f}^2 = m_2^2\, v_{2f}^2 \sin^2\theta + m_2^2\, v_{2f}^2 \cos^2\theta - 2(m_1 v_{1i} + m_2 v_{2i}) m_2 v_{2f} \cos\theta + (m_1 v_{1i} + m_2 v_{2i})^2$$

$$m_1^2 v_{1f}^2 = m_2^2\, v_{2f}^2 (\sin^2\theta + \cos^2\theta) - 2(m_1 v_{1i} + m_2 v_{2i}) m_2 v_{2f} \cos\theta + (m_1 v_{1i} + m_2 v_{2i})^2$$

$$m_1^2 v_{1f}^2 = m_2^2 v_{2f}^2 - 2(m_1 v_{1i} + m_2 v_{2i}) m_2 v_{2f} \cos\theta + (m_1 v_{1i} + m_2 v_{2i})^2 \qquad \text{(D)}$$

C: $\quad m_1 v_{1f}^2 = m_1 v_{1i}^2 + m_2 v_{2i}^2 - m_2 v_{2f}^2$

$$\frac{D}{C}: \qquad \frac{m_1^2 v_{1f}^2}{m_1 v_{1f}^2} = \frac{m_2^2 v_{2f}^2 - 2(m_1 v_{1i} + m_2 v_{2i}) m_2 v_{2f} \cos\theta + (m_1 v_{1i} + m_2 v_{2i})^2}{m_1 v_{1i}^2 + m_2 v_{2i}^2 - m_2 v_{2f}^2}$$

$$m_1 = \frac{m_2^2 v_{2f}^2 - 2(m_1 v_{1i} + m_2 v_{2i}) m_2 v_{2f} \cos\theta + (m_1 v_{1i} + m_2 v_{2i})^2}{m_1 v_{1i}^2 + m_2 v_{2i}^2 - m_2 v_{2f}^2}$$

$$m_1 (m_1 v_{1i}^2 + m_2 v_{2i}^2 - m_2 v_{2f}^2) = m_2^2 v_{2f}^2 - 2(m_1 v_{1i} + m_2 v_{2i}) m_2 v_{2f} \cos\theta + (m_1 v_{1i} + m_2 v_{2i})^2$$

$$m_1^2 v_{1i}^2 + m_1 m_2 v_{2i}^2 - m_1 m_2 v_{2f}^2 = m_2^2 v_{2f}^2 - 2(m_1 v_{1i} + m_2 v_{2i}) m_2 v_{2f} \cos\theta + m_1^2 v_{1i}^2 + m_2^2 v_{2i}^2 + 2 m_1 m_2 v_{1i} v_{2i}$$

$$m_1 m_2 v_{2i}^2 - m_1 m_2 v_{2f}^2 = m_2^2 v_{2f}^2 - 2(m_1 v_{1i} + m_2 v_{2i}) m_2 v_{2f} \cos\theta + m_2^2 v_{2i}^2 + 2 m_1 m_2 v_{1i} v_{2i}$$

$$(m_2^2 + m_1 m_2) v_{2f}^2 - 2(m_1 v_{1i} + m_2 v_{2i}) m_2 \cos\theta \, v_{2f} + m_2^2 v_{2i}^2 + 2 m_1 m_2 v_{1i} v_{2i} + m_1 m_2 v_{2i}^2 = 0$$

$$\underbrace{(m_2^2 + m_1 m_2)}_{a} v_{2f}^2 \underbrace{- 2(m_1 v_{1i} + m_2 v_{2i}) m_2 \cos\theta}_{b} \, v_{2f} + \underbrace{m_2^2 v_{2i}^2 + 2 m_1 m_2 v_{1i} v_{2i} + m_1 m_2 v_{2i}^2}_{c} = 0$$

$$v_{2f} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

From the $\pm$, start by choosing the + answer, and see if you get reasonable values.

Finally, to get v_{1f}, go back to equation (B):

$$v_{1f} = \frac{-m_2 v_{2f} \sin\theta}{m_1 \sin\phi}$$

The equations in yellow are essentially what you need to insert in the code. Insert them in steps, in whatever organized way that you prefer. You probably want to calculate θ first, then v_{2f}, and ϕ and v_{1f}.