

New particles

**Loop I**  
Exospheric Particle Transport  
and Surface Interactions

thermal desorption; photodesorption; sputtering

Launch particle  
at  $\vartheta_0, \varphi_0$  with  
 $\mathbf{v} \sim V_{\text{MBF}}$

Calculate landing  
position  $\vartheta_1, \varphi_1$   
and time-of-flight  $t_f$

$$v \geq v_{\text{esc}}$$

Escape

Landing at  $\vartheta_1, \varphi_1$

Surface Interactions  
at  $\vartheta_1, \varphi_1$

Cold  
Trapping

*Photo-  
dissociation*

*(Sub-) Surface  
reaction*

*Adsorbate  
photodissociation*

*Store converted  
particles for  
next iteration*

