Mathematical Epidemiology for KoroNERV-20
- notes at Jun 8th regular meeting

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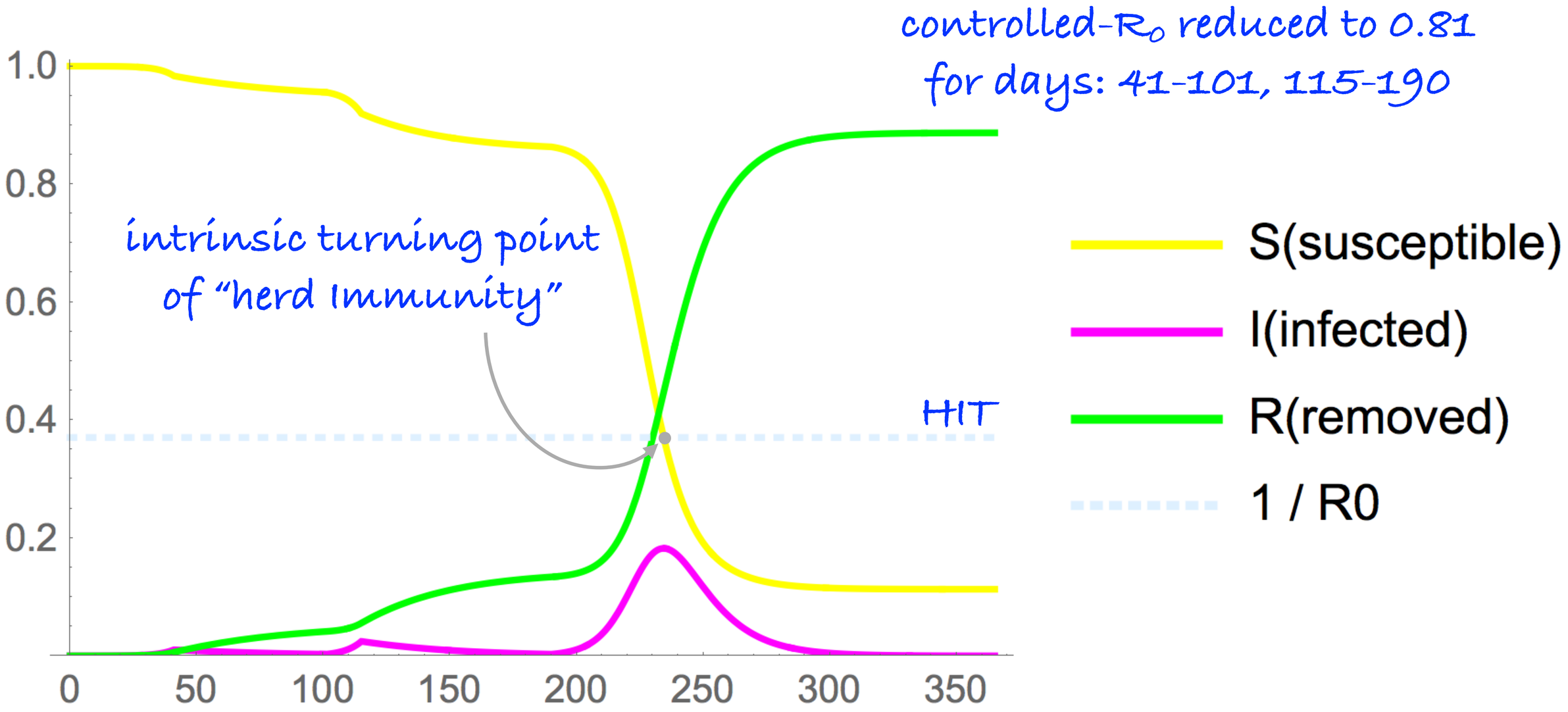
Remember

- We model it as a **machine**
  - it has its code
  - it consumes energy (of us)
  - it is still going on
- If we do rely on a model, we shall respect all it can tell us fully

Herd Immunity Threshold Revisited



Basic Vaccination Equation Revisited for HIT

$$threshold(\mathcal{R}_0, \varepsilon) = \frac{1}{\varepsilon}\left(1 - \frac{1}{\mathcal{R}_0}\right)$$

ε	R_0				
	2.7	3.5	4.5	5.5	6.45
92 %	68 %	78 %	85 %	89 %	92 %
86 %	73 %	83 %	90 %	95 %	98 %
80 %	79 %	89 %	97 %	—	—
63 %	100 %	—	—	—	—

- Assumptions:
  - vaccine distributed ***uniformly among yet-susceptible*** people
  - vaccine efficacy ***ε - for spreading***
  - immunity does not vanish in near time (circa one year, at least)
- Recovered people fraction bearing natural immunity then sums up with the vaccinated fraction
  - not shown here for clarity
  - be careful with overlaps

Attachments - presented and discussed together with this note

- S1228_Imperial_Evaluating_the_Roadmap_out_of_Lockdown_Step_3.pdf
- S1227_SPI-M-O_Summary_of_further_modelling_of_easing_restrictions_Roadmap_Step_3__2_.pdf
- 3_June_2021_Risk_assessment_for_SARS-CoV-2_variant_DELTA.pdf

Revision History

- 2021/06/8: release version 1