

Covid 19 Seen by Differential Equations (Covid 19 Vu par des Equations Différentielles)

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I hope every one is well and healthy.

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And please don't forget asking God to preserve us.

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- The second thing, the actuality oblige, I try to give some elementary mathematical models dealing with the Covid 19.

- Let start from the word "COVID19" used by WHO, The world health organization, and other health organizations.

(Le mot "COVID19" utilisé par l'OMS, l'Organisation mondiale de la santé et d'autres organisations de la santé.

- It means Coronavirus disease 2019 (Cela signifie la maladie de coronavirus 2019), since there are many coronavirus or different virus with corona or crown (like the crown used by kings or princes) and 2019 to say that is relative to that one discovered in 2019, I mean the virus discovered 2019.

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(se lu Coronavirus disease 19, Cela signifie la maladie de coronavirus 2019), car il existe de nombreux virus avec couronne ou différents virus avec couronne les virus ont une couronne comme celle utilisée par les rois ou les princes, et 19 pour dire que c'est relatif à celui découvert en 2019, je veux dire le virus de 2019.)

- It is an infectious disease caused by a new coronavirus discovered in 2019.

(Il s'agit d'une maladie infectieuse causée par un nouveau coronavirus découvert en 2019.)

- The disease causes respiratory illness (like the flu) with symptoms such as a cough, fever, and in more severe cases, difficulty breathing.

(La maladie provoque une maladie respiratoire (comme la grippe) avec des symptômes tels que la toux, la fièvre et, dans les cas plus graves, difficulté à respirer.)

- You can protect yourself by washing your hands frequently, avoiding touching your face, and avoiding close contact (1 meter) with people who are unwell.

(Vous pouvez vous protéger en vous lavant fréquemment les mains, en évitant de vous toucher le visage et en évitant tout contact étroit (1 mètre) avec des personnes malades.)

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 - 1- HANDS: Wash them often
 - 2- ELBOW : Cough into it
 - 3- FACE :Don't touch it
 - 4- SPACE :Keep safe distance
 - 5- HOME :Stay if you can

Pour la prévention, ou pour aider à arrêter COVID19, l'OMS recommande cinq choses:

- 1- Mains: Lavez-les souvent
- 2- Coude: Toussez dedans
- 3- Face: Ne le touchez pas
- 4- Espace: Gardez une distance de sécurité
- 5- Maison: Restez à la maison si vous le pouvez

At the end I just make the following remarks

- First that to reduce the spread of coronavirus the most countries reached by the infection have imposed drastic measures as mass lockdowns and partial or total populations containment.

(
pour réduire la propagation du coronavirus, la plupart des pays touchés ont imposé des mesures drastiques comme des blocages massifs et le confinement partiel ou total des populations)

- Second WHO is launching dedicated messaging services in Arabic, French and Spanish with partners WhatsApp and Facebook to keep people safe from coronavirus. This easy-to-use messaging service has the potential to reach 2 billion people and enables WHO to get information directly into the hands of the people that need it. If you are interested to Join WHO's Health Alert on WhatsApp:
 - Arabic
Send the word "marhaba" written in arabic to +41 22 501 70 23 on WhatsApp
[wa.me/41225017023?text=the word "marhaba" written in arabic](https://wa.me/41225017023?text=the%20word%20marhaba)

- French

Send "salut" to +41 22 501 72 98 on WhatsApp
wa.me/41225017298?text=salut

- Spanish

Send "hola" to +41 22 501 76 90 on WhatsApp
wa.me/41225017690?text=hola

- English

Send "hi" to +41 79 893 18 92 on WhatsApp
wa.me/41798931892?text=hi

(L'OMS lance des services de messagerie dédiés en arabe, français et espagnol avec ses partenaires WhatsApp et Facebook pour protéger les personnes contre le coronavirus. Ce service de messagerie facile à utiliser peut atteindre 2 milliards de personnes et permet à l'OMS de mettre les informations directement entre les mains des personnes qui en ont besoin. Si vous êtes intéressé à rejoindre l'alerte de santé de l'OMS sur WhatsApp:

- Arabe

Envoyez le mot "marhaba" écrit en arabe au +41 22 501 70 23 sur WhatsApp

[wa.me/41225017023?text=the mot "marhaba" écrit en arabe](https://wa.me/41225017023?text=the mot \)

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After this introduction the next lectures will concern the discussion of two models:

The first one is an easy one but it is not realistic since we consider a closed population, which is not the case since know the world is borderless. It will be an interesting one since we can see how simple mathematical formulas intervene in the study of such diseases

Dans les prochaines conférences, nous discuterons deux modèles: Le premier est facile mais il n'est pas réaliste car nous considérons une population fermée, ce qui n'est pas le cas car sachez que le monde est sans frontières. Ce sera intéressant car nous pouvons voir comment les formules mathématiques simples interviennent dans l'étude de ces maladies

The second one is compartments model in which the population is subdivided in three compartments the susceptible one's, the infected and the recovered one's, which is known as SIR model. This one is more realistic since we consider the different classes of the population.

Le second est le modèle à compartiments dans lequel la population est subdivisée en trois compartiments, le sensible, le infecté et le récupéré, connu sous le nom de modèle SIR. Celui-ci est plus réaliste puisque nous considérons les différentes classes de la population.

NPR <https://www.npr.org>

WHO <https://www.who.int/emergencies/diseases/novel-coronavirus-2019>.

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