1. Proposal : (partner: Prof.Feleke)

**“Modeling and optimization of temperature distribution in cast iron of electromagnetic induction injera mitad”**

1. Problem:
   1. Electomagnetic induction heating for domestic cooker – as a mitad.
   2. Magneto-thermal equation (ref. 1 <https://www.scientific.net/MSF.792.251>)
   3. Previous studies
2. Magnetic flux in cylindrical co-ordinate

* Model:



* Analytic solution

+ 1968, <http://carlosgj.org/Lorentz/Ref/DoddDeeds.pdf>)

+ 2012, <http://ira.lib.polyu.edu.hk/handle/10397/5526>

* Still it is needed special technical tools to get the numerical values.

1. Heat equation in cylindrical co-ordinate

* Model



* Solution

+ No analytic solution

+ Numerical solution: FEM – mesh generations

1. Magneto-thermal

- 1) and 2) combination

- optimization: FEM + CNN 🡪 <https://www.scientific.net/MSF.792.251>

🡪difficult to analyze.

1. Goal to this study
   1. To get numerical values on the analytic solution

* Use matlab code(2016…)
* Open software tools – chebfun (<https://www.chebfun.org/>)
* To optimize to design coil distributions: Maybe it is feasible….
  1. experiment – to be later

-------------the end-----------------