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# Federated Stochastic Approximation of the EM Algorithm

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## Abstract

1 To be completed

2 **1 sEM methods for Federated Learning**

- 3     • Exact expectations  
4     • Incremental and variance reduced methods

5 **2 SAEM algorithm for Federated Learning**

- 6     • SA of the expectations  
7     • Monte Carlo approximations  
8     • Exponential Family  
9     • Statistics stored on devices and parameters computed on device  
10    • FedAvg on central server -  $\zeta$  boils down to the Averaging of parameters that we may do in  
11    standard central settings (Polyak)  
12    • Applications to PK-PD modeling

13 **3 Numerical Examples**