AbstractID:9681Title:Fa sth yperthermiatemp eratureo ptimizationfor pelvi ccarcinoma patienttreatedi nSig ma-Eyea pplicator

Purpose:

Thoughhype rthermiashowsp romising featuresbeingus edwit hradi ationan dchemother apy,i trequiresaccur atespatialpower focusing,whichlead saw orkload proportionaltosquareofnumb erofant ennasinanapplicator. Thismotivatesthisinvesti gationof modelreductionm ethodf orp elvic-carcinomapatientt reatedi nSi gma-Eyeapplic ator.

Methodand Materials:

Ap atientplacedin themi ddleringof this100M Hz3 -ring12 -antennaapp licatorwasusedtovalidateour   a pproach.A ‘ similar’ patientwi thdifferent thermalp ropertyvalues,perfusi onvaluesand wasplaced betwe enth emi ddlea nd lowringwasus edto determinedvirtualsou rce (VS)ba sisvectors.AVS vec torisaweigh tedcom binationofmagnitud esandphasesof12antennas   an d wasdeter minedt oma ximizeaver agedtumortemperature . Physicalvariableswer epr ojectedtoareducedVSsubspace   spannedby a few VSvect ors. Temperatureres ponsefuncti onsoftumorandnormalti   ssueweredeterminedinth isr educedsubspaceandthenused intem peratureoptimiza tioni terationp rocess.

Results:

Bycomparin g the optimizedtem peraturee levationdist ributions,wefoundi   tisi ndeedfeasibletouseafewchosen(best)VS   ba sis vectorsto optim allytreata pel vicc arcinomapatienti nSi gma-Eyeappli cator;ev enwhenwedeterminedthosevirtualsourcebasis vectorsfr oman existing“sim ilar”p atient.

Conclusion:

Thiss uccesssuggestsa   faster andea sierpre -treatmentt emperatureopt imizationapproachthatrelivesworkloadsofphysicians   .